Service Manual

ViewSonic 15G

Model No. 1569GA

15" Digital Controlled Color Monit
Graphics Seri

(Rev. 1 - July 1

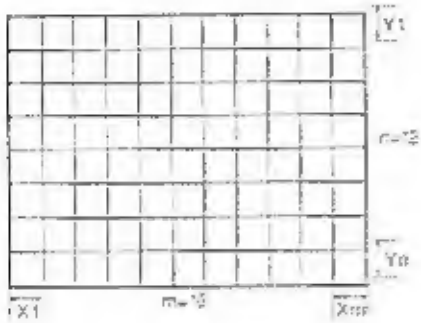
5.6.4 Linearity

Horizontal linearity

$$= \frac{X\ max. - X\ min.}{X\ max. + X\ min.} \times 100\% \leq 7\%$$

Vertical linearity

$$= \frac{Y\ max. - Y\ min.}{Y\ max. + Y\ min.} \times 100\% \leq 6\%$$



Conditions

Display image---crosshatch pattern

Maximum and minimum values should not be adjacent to each other.

X max. is maximum value among X1~Xm

X min. is minimum value among X1~Xm

Y max. is maximum value among Y1~Yn

Y min. is minimum value among Y1~Yn

5.7 General performance

5.7.1 Video output

Bandwidth	95MHz (Typ)

Picture is readable 80MHz dot frequency signal

5.7.2 Maximum luminance

Value	120 cd/m² (min.) at the center of the display area Specified by 9300K + 27 MPCD
Conditions	Display image: White full flat field Luminance: Min. (Contrast: Max.) (Brightness: Center)

5.7.3 Minimum luminance

Value	≤ 2cd/m² at the center of the display area Specified by 9300 K + 27 MPCD
Conditions	Display image: White full flat field Luminance: Min. (Contrast: Min.) (Brightness: Center)

5.7.4 Brightness variation

Value	65%(Min.) Variation = C/A × 100
Conditions	Disply image: White full flat field Luminance: 110 cd/m² at center of the display area. A: Luminance at the center position C: Luminance at position of lowest brightness

5.7.5 Display area regulation

	Display area variation	Range of variation
Due to Luminance	Within 1.5% of display area	26~120CD/m² (White flat field)
Due to Power supply	Within 1.5% of display area	AC: 90-132V or 198-264V
Due to Temperature	Within 2.0% of display area	0-35°C Meet 40°C

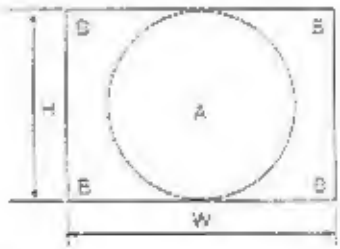
5.7.6 Color Point

Value	※ 9300K+ 27MPCD (x=0.281± 0.020, y=0.311± 0.020)
Conditions	Display image: White flat field at the center of the display area. Luminance: 26~120 cd/m²

5.7.7 Misconvergence

Center area of display (A) 0.3 mm (Max.)

Corner area of display (B) 0.4 mm (Max.)



Conditions:

Display image: Crosshatch pattern mixed with R, G and B colors.

Convergence gauge: KLEIN CM7AG or equivalent

W × H: 260 × 195 mm

5.7.8 Purity

Conspicuous mislanding shall not be visible within display area at a distance of 60cm from the CRT surface.

Conditions:

Display image: White flat field

Luminance: 80 cd/m² at the center of display area.

5.7.9 Jitter

Less than 1 dot, or invisible at a distance of 60cm from CRT surface.

5.7.10 Audio

Electric Characteristics

	Item	Condition		Specification		
				Min.	Typ.	Max.
Line Input	Line input signal level	f: 1kHz			0.8Vrms	2.0Vrms
	Line input impedance				24kΩ	
Audio-SP	Maximum Power Output (Electric)	f: 1kHz, THD: 7%		1W+1W	2W+2W	
	Signal to Noise Ratio	f: 1kHz with 20kHz Low Pass filter			50dB	
	Cross Talk	f: 1kHz			50dB	
	Distortion	f: 1kHz, Output: 1W				1%
		f: 1kHz, Output: 2W				10%
	Response Characteristics	THD: 1% Output: 1W 0dB at 1kHz	100Hz		+6dB	
			10KHz		-6dB	
Headphone	Maximum Electric Power Output	f: 1kHz THD: 1%, Rc: 32Ω		5mW	40mW	
	Distortion	f: 1kHz Output: 2mW Rc: 32Ω				1%
Mic	Microphone Sensitivity	f: 1kHz, Pin= 1Pa (0dB=1V/Pa)			-46dB	

6.POWER MANAGEMENT FOR POWER SAVING

Power saving system is designed upon based VESA DPMS standard (Proposal 1.0p, Revision 0.7p)

Power consumption and recovery time

*1 APM state	H. Sync	V. Sync	VIDEO	MONITOR POWER CONSUMPTION	RECOVERY TIME TO ON STATE	INDICATOR
ON	*3 NORMAL	*3 NORMAL	*2 ACTIVE	*4 100 %	-------	Green
STAND-BY	No Sync or *5 < 5 KHz	> 40 Hz	*6 BLANK	< 30 W	< 4 s	Yellow
SUSPEND	> 10 KHz	No Sync or *5 < 20 Hz	*6 BLANK	< 30 W	< 4 s	Yellow
OFF	No Sync or *5 < 5 KHz	No Sync or *5 < 20 Hz	*6 BLANK	< 3 W	< 20 s	Yellow

- The transition time from ON state to each AMP state is 5 seconds.

*1: APM: Advanced Power Management.

*2: Measure condition of power consumption for ON state.
— DISPLAY IMAGE: White for "H" characters with a border line (7 X 9 dots)

*3: Normal: See page 6 "Acceptable timing"

*4: Power consumption is measure at AC100-240V.

*5: Power saving operation is done at least less than specified value in the list.

*6: VIDEO BLANK: "BLANK" indicates the set up signal and no sync signal on Video Signal.

7. ENVIRONMENTS

7.1 Ambient temperature, humidity and altitude

	Operating	Storage and Shipment
Temperature	0°C ~40°C (32~104°F)	-20°C ~60°C (-4~140°F)
Humidity	5~90% *	5~90% *
Altitude	3,000 m (Max.) (10,000 ft)	12,000 m (Max.) (40,000 ft)

*Non-condensation

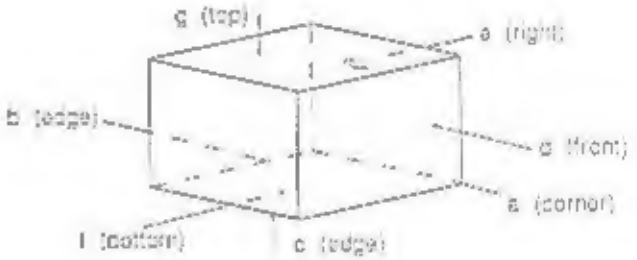
7.2 Vibration and shock

(1) Vibration

	Order of tests	Direction of vibration		Acceleration		Frequency	Sweep	Test time
				Non-Operation	Storage and shipment			
Unpacked	1	Vertical	Up to down	2.9 m/s² (0.3 G)		5~55 Hz	120 S	30 min.
	2	Horizontal	Front to back					15 min.
	3		Right to left					
Packed	1	Vertical	Up to down		9.8 m/s² (1.0 G)	5~50 Hz	610 S (Log - sweep)	40 min.
	2	Horizontal	Front to back		4.9 m/s² (0.5 G)			20 min.
	3		Right to left		(1G=9.80665 m/s²)			

(2) Shock (Drop test)

Unpacked	20 G One time for each face (6 faces) (non-operation)			
Packed	Order of drop	Face to drop is to face the floor. (see the figure)	Height	Number of drop
	1 Corner, 3 Edge, 6 Face		61 cm	1 time for each

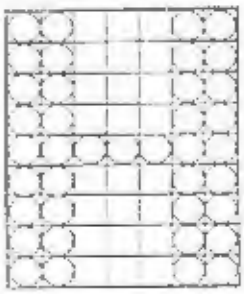


8. REGULATORY STANDARDS

8.1 Safety standards, Applicable standards
UL1950, Listing,
CSA 22.2 No. 950, Products Certification
TUV (EN60950/IEC950/DHHS/818), NORDIC
DHHS, 21 CFR Subchapter J, X-Ray Radiation
PTB, X-Ray Radiation, Self Declaration, HWC

8.2 EMC standards
Designed to meet the following standards
VCCI class 2
FCC part 15, subject B, class B
VDE 0878 class B, NPRI-II Radiation
CISPR22 class B, TCO-92

<EMI test pattern>
White, full "H" characters (7 × 9 dots), block (8 × 16 dots) "H" character font is as follows:



8.3 CABLE
1) Signal cable with Mini D-Sub 9P connector (VIDEO CABLE) Length: 1.5 meter (4.93 feet)
2) Audio cable: Dual RCA jack (male) - Stereo mini jack (male) Length: 1.5 meter (4.93 feet)
3) Microphone cable: Stereo mini jack (male) Length: 1.5 meter (4.93 feet)

} Available from '95 June Production

DIMENSIONS

Dimensions:

Width : 14.7"(374mm)

Height : 15.1"(383mm)

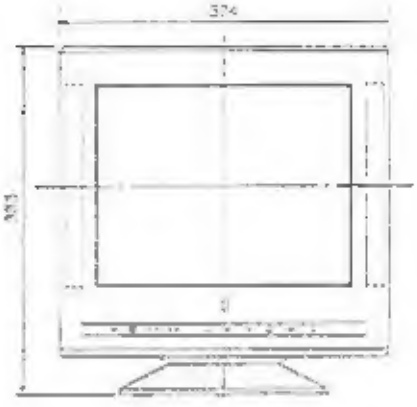
Depth : 16.0"(407mm)

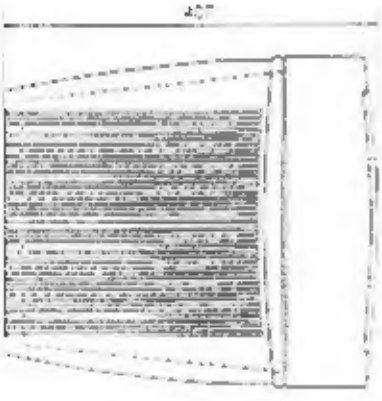
Pan/Tilt range

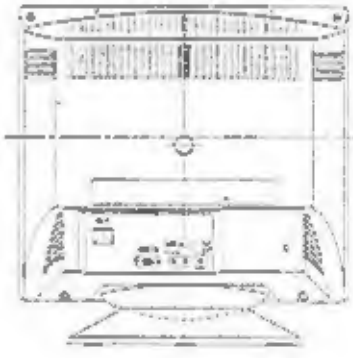
Up : 13 degrees

Down : 4 degrees

Left, right : 90 degrees each

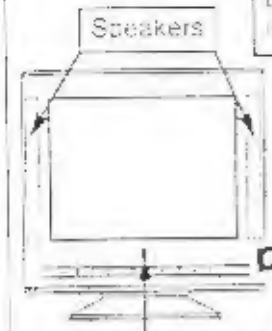






CONTROL LOCATION

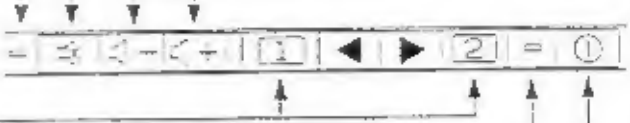
Front



Mute LED
Indicates that the built-in speakers are in mute operation.

Mute key
Turns the built-in speaker and headphone terminal sound ON and OFF. Press once to turn the sound OFF and again to turn the sound back ON.

Volume key
Adjusts the sound volume for the built-in speakers and the headphone terminals. The + key lowers the volume, the – key raises the volume.



1 · ◀ · ▶ · 2 Key
These buttons are used for screen adjustment. Read the following sections for details.

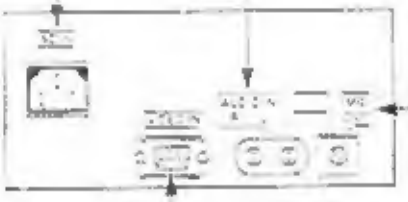
Pilot LED
Lights up green when power is ON, turns yellow in power management mode.

Power switch
Turns power ON and OFF. Press to turn power ON; press again to turn power OFF.

Rear

Power connector
Connect the AC cable here.

Microphone output terminal
Connect to the computer microphone input. Please be sure to use a stereo-type cable.



Audio signal input terminal AUDIO IN R: right, L: left
Audio output from the computer is input here.

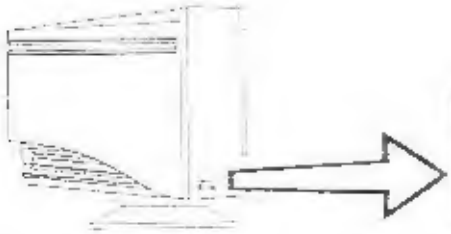
Mini D-sub 15-pin signal connector
Connect the display signal cable here.

The rows of pins are given in the table at right.

Pin No.	Signal name	Pin No.	Signal name
1	red signal	9	Not used
2	green signal	10	ground
3	blue signal	11	ground
4	ground	12	SDA (DDC)*
5	ground (DDC)*	13	horizontal synchronization signal
6	red signal ground	14	vertical synchronization signal
7	green signal ground	15	SCL (DDC)*
8	blue signal ground		

* VESA DDC standard

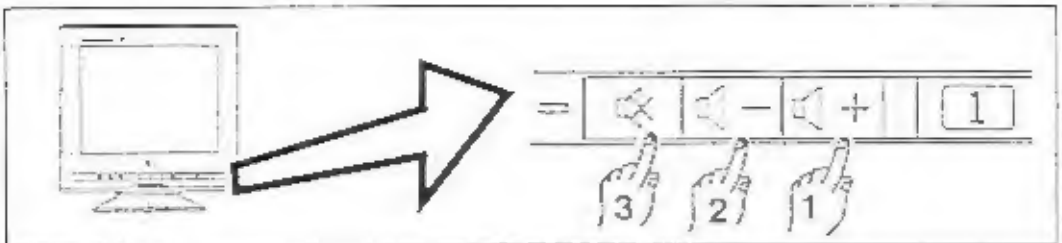
Left side



Headphone terminal
Commercially available audio stereo head phones or speakers can be connected here.

Microphone terminal <MIC IN>
Connect an external microphone here.

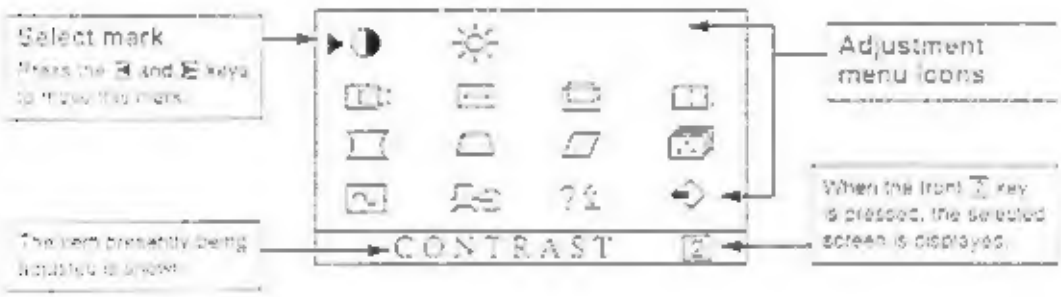
Speaker operation



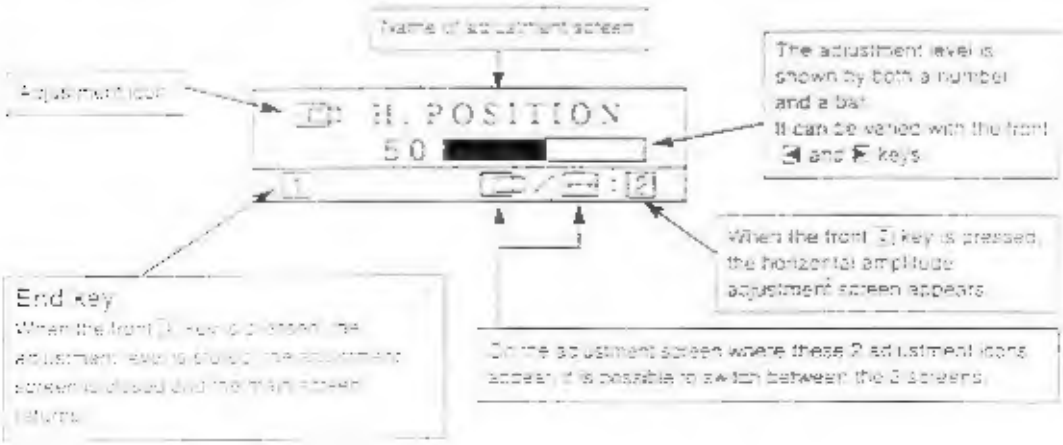
1	VOLUME 80	When the key is pressed, the volume is raised.
2	VOLUME 50	When the key is pressed, the volume is lowered.
3	VOLUME MUTE	When the key is pressed, the volume is muted.

On-Screen Display

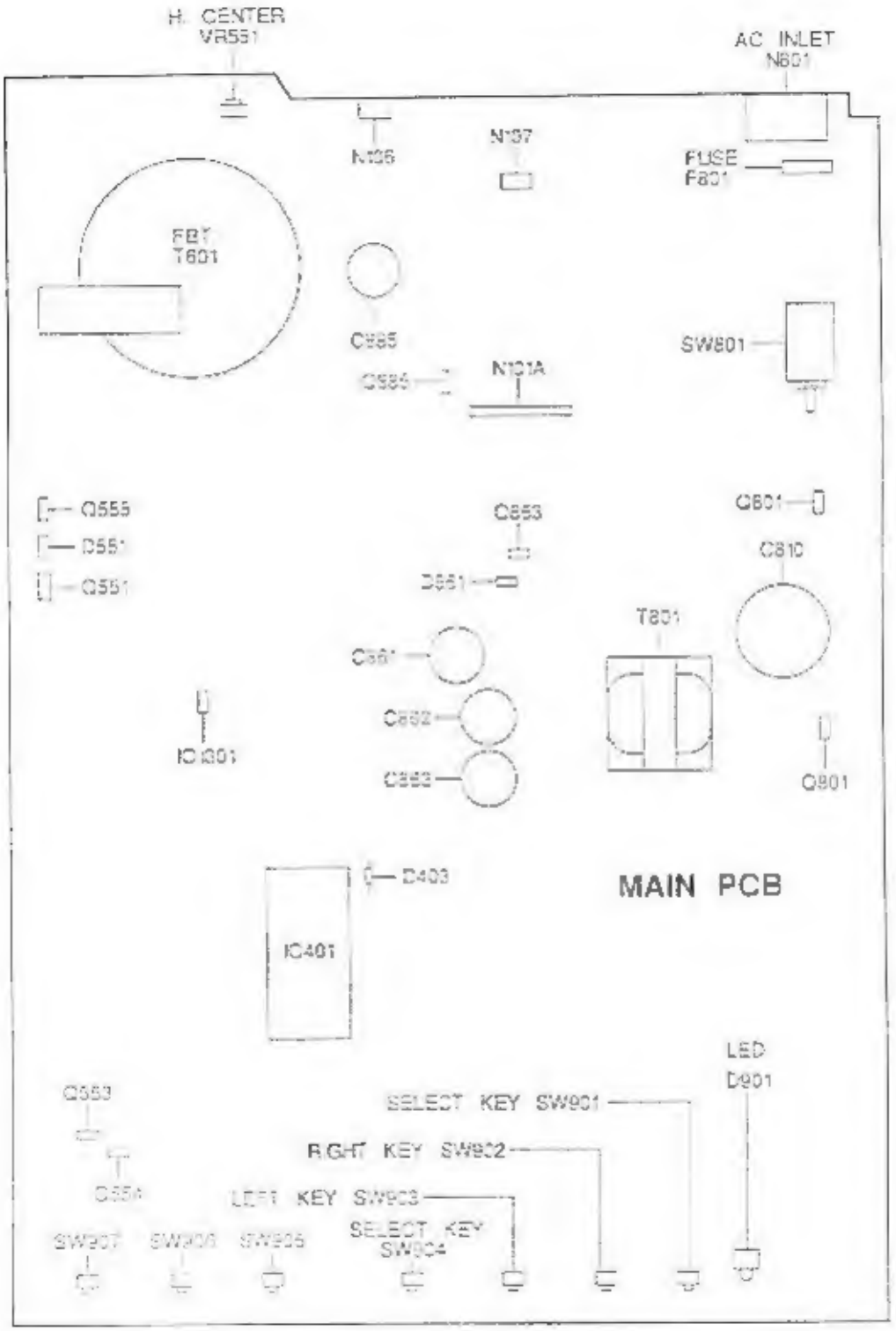
1) Menu screen



2) Adjustment screen (example: horizontal position adjustment)



SERVICE ADJUSTMENT CONTROL LOCATION



CAUTION FOR ADJUSTMENT AND REPAIR

1. Degaussing is inevitably required during purity or convergence adjustments.
2. If you check or adjust electrical specification or function, a minimum of 20 minutes burn-in is required.
3. Reforming of the leadwire is required after your repair work.
4. Prior to starting work, be sure to check that the input signal is at the specified timing and that the polarity is as specified in all modes.
5. Brightness control: After mounting the rear cover, brightness tend to decrease about 5 cd/m² on a flat white field and about 1 cd/m² on a white raster field. This should be taken into consideration.
6. Brightness stabilizing time: It takes about 20 to 50 seconds for the brightness to stabilize after turning the power off for 5 seconds (AC).
7. Aging should be performed in white raster of 30~50 cd/m² and raster size of 280 X 210 mm before adjusting the ITC.
8. Contrast: When both CONTRAST switches (UP and DOWN SW) are simultaneously presed, the contrast increases to a maximum.
9. Brightness: When both BRIGHT switches (UP and DOWN SW) are simultaneously pressed, the brightness lights at the center point.

CAUTION FOR SERVICING

When servicing or replacing the CRT, high voltage sometimes remains on the anode. Completely discharge high voltage before servicing or replacing the CRT to prevent a shock hazard.

CRT Anode Discharge

1. When you check the CRT anode or replace the CRT, discharge the CRT anode to the external conductive coating (aquadag) of the CRT, especially when checking directly right after power turn-off.
2. Ground one end of a jumper wire that has a 100 M Ω resistor (30 KV resisting pressure 100MΩ) and connect the other end to the CRT anode.

   NOTE: Grounding must be done first.

Power Supply

This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

1. Do not touch the HOT section and the COLD section at the same time. You may receive an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or damage parts.
3. Never measure the HOT section and COLD section at the same time when using tools such as oscilloscopes or multimeters.
4. Always unplug the unit before beginning any operation such as removing the chassis.

INTRODUCTION

- This monitor is controlled by microcomputer. With the exception of purity/convergence/focus all is digitally adjusted.
  Therefor a computer, the dedicated control software, the dedicated interface, a 9~12V power supply, and a signal generator are required servicing.

TOOLS REQUIRED

- **Computer**

  The control software is IBM PC compatible only. Therefore it is not compatible with any other operating systems. For further information please contact 1-800-888-8583.

- **Control Software**

  The 1569GA-1 chassis can only use "1569GA-1 adjustment program disk" No other program can access the EEPROM on the monitor.

- **Interface**

  The interface is dedicated to work only with the control software and the "1569GA-1". There are no substitutes for this interface.

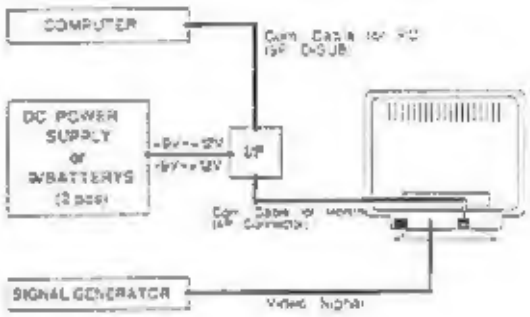
- **Power Supply**

  A DC 9~12V (+9~12V/-9~12V) power supply is required for operating the interface.

- **Signal Generator**

  It is necessary for you to use a signal generator which operates on fH=69 KHz, fV=160 Hz, and fc 86 MHz bands.

INTERFACE CONNECTION



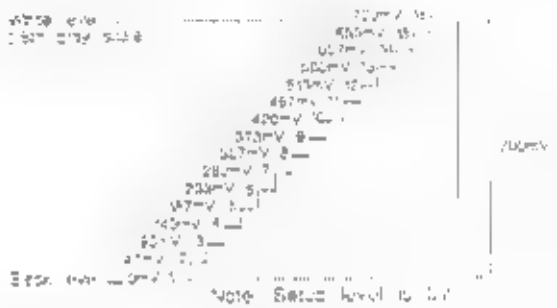
OTHER TOOLS

- Oscilloscope (dual trace)
- Scope probe - Attenuation: 100:1
  Attenuation: 10:1
- Digital Voltmeter - Range: 0 to 1000V DC
  Accuracy: 0.1%
- TV color Anyalyzer (L - that reads luminance and chromaticity X and Y coorcinates.
- Digital High Voltmeter
- AC power supply - Output voltage: 0 to 300V
- Degaussing coil
- Convergance meter
- Scale
- Double-faced scale
- Microscope - Scale factor: 50
- Screwdriver - Tip width: 1/10" (2.5 mm)
  One with extremely narrow tip end
  Length: 5" (13 cm)
- Screwdriver - Cross recessed head
  Length: 14" (35 cm)
- Tool for hexagon socket set screw of Deflection Yoke
- White lacquer (Paint)

STANDARD CONDITION OF ADJUSTMENT PROCEDURE

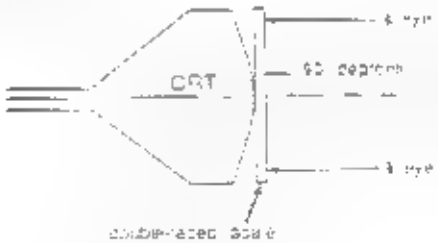
- Signal timing: Standard timing 1024 × 768 (See page 5)
- Display pattern: White, full "H" character
- Signal level: Vidt TTL level video: 700mV
- Input source: AC 120V, 50/60 Hz
- Ambient temperature: Room temperature
- Warm-up time: More than 30 minutes
- Brightness control: Center
- Contrast control: Max.
- Magnetic field: Vertical: -M: 50 uT, -E: 40 uT, A: 45 uT
- Signal cable: Horizontal: 0 uT
  Attached

Video input signal from PC.



Note: Setup level is 0 V.

- Use a Helmholtz device to adjust a unit with no horizontal magnetic field and a vertical field of 40 uT.
- Inspect the unit under the same conditions.
- The ambient luminance must be 200 lux.
- Use an external degaussing coil any time the DEGAUSS switch does not remove color shading. To check the image width, height, linearity and distortion, proceed as below.



Measure level with respect to tube axis.

ADJUSTMENT SOFTWARE

1. Software operating procedure

1) Power on the computer.
2) Connect the Communication cable for monitor as correct.
3) Insert the adjustment disk into the drive.
4) At the A:\>prompt type ADJ, then press [ENTER].
5) Refer to the adjustment procedures.

2. Adjustment Program

Main Menu of Adjustment Program

```
<<1560GA-I ADJUST PROGRAM MAIN MENU>>  (stock)      (Ver 1.5)
   1)  Load data from FILE          6  Save data to FILE
   2)  Adjust VSR setting           7  Change EEPROM data
   3)  Adjust DISTORTION            8  Special ADJUST
   4)  Adjust Factory preset        9  Information Service
   5)  Clear User preset            10 Show Version & Error
```

Description of Function of Each Menu

1. Load Data from File:
   This transfers the data file from the disc to the EEPROM on the monitor.
2. Adjust VSR Setting:
   To guarantee the full range of horizontal frequency operate correctly. The reference voltage and the distortion offset data should be set.
3. Adjust Distortion:
   To make adjustments of any geometric distortion such as E-Trapezoid or Parallelogram.
4. Adjust Factory Preset:
   Makes adjustments to the factory presets. This data is also referenced when in modes other than the preset mode.
5. Clear User Preset:
   Clearing this function in the user preset comes. There is no data in the user presets when the product shipped from the factory.
6. Save Data to File:
   Reads the data from the EEPROM on the monitor to a data file on a floppy disk or hard drive. The data file can be named anything as long as it is less than 8 characters long.
7. Change EEPROM data:
   Allows the user to change the EEPROM to be changed.
8. Special ADJUST:
   This menu item has three separate functions.
   A. Adjustment: This gives two items of adjustment, DAF, and V. Lin.Cir.
      The Dynamic Astigmatism Focus (DAF) and the Vertical Linearity need to be set for correct operation.
   B. Data calculation: There are three items of data calculation, Video Upp, Color Adjust, and H. Size Limit. All these data must be calculated automatically by the software.
   C. Error Trim: This compares the non-adjustable data of the EEPROM with the non-adjustable data on the disk. If differences are found, the EEPROM should be replaced.
9. Information Service:
   This gives the version of the software that is being used on the monitor and gives the operational status of the monitor.
10. Show Version and Error:
    Shows the version of the software used in the monitor. Also, if there is an error in the operation of the monitor. This shows the error code on the screen in the FIL.

ADJUSTMENT PROCEDURE WITH COMPUTER

1. Description of Adjustment Method

Item Program Menu	○ Test Meter ▼ Test Point □ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
A. DATA SETTING 1) Load data from FILE	▼ C[illegible] ~ GND	A1 A2 A3 A4	OFF	Turn the power on, but do not connect the signal cable. Press [illegible] by setting the cell to the menu at left. A message FILE -> EEPROM FILE NAME (G or C [illegible] [illegible]) is displayed. So, key in the T7EF-1K.DAT (when using the standard data) and press [illegible]. Note : To make the transferred data effective, turn the power of the monitor set off once and turn it on once again. Only load standard data when the main board or the EEPROM is replaced.	
B. X-RAY Protector	▼ D[illegible] ~ GND	B1 B2 B3	[illegible]	Apply 15V to the test point. The monitor will shut down. Turn OFF and then turn ON the power, the monitor will be operated [illegible].	
C. [illegible] ([illegible] adjust)	○ Digital voltmeter ▼ TP1 ~ GND □ Crosshatch	C1	[illegible] 2 3 4	Adjust VR501 to get the 24V at test point at the right is [illegible]. [illegible] 5V ± 0.5V [illegible] 54.0V ± 0.5V [illegible] 74.0V ± 0.5V [illegible] 95.5V ± 0.7V	24.0 ± 0.5V
D. [illegible] 1) Adjust [illegible]	○ Digital voltmeter ▼ C[illegible] ~ GND □ Video OFF	D1 D2 D3 D4 D5 D6 D7 D8 D9	[illegible] 2 3 4	Set the cell to the menu at left and press the [illegible]. Set the cell to the adjusting mode NTP(0) and press the [illegible]. Check to be sure that the input signal to the monitor is (H [illegible] kHz) and (V 48.0Hz) and press the [illegible]. Set the cell to [illegible] OUT [illegible] and press the [illegible]. Then move the cell to the data [illegible]. Make adjustment to as shown at right using [illegible] and [illegible]. Make registration using the [illegible] after adjustment and press the [illegible] to the menu of D2. (The same as D2, D3, D4 and D5 after setting the adjusting mode signal and adjustment. Adjusting mode NTP(1) Input signal [H 38.0kHz][V 77 [illegible]Hz] Adjusting mode NTP(2) Input signal [H 64.0kHz][V 105.0Hz] Adjusting mode NTP(3) Input signal [H 69.9kHz][V 105.0Hz] Return to the main menu by pressing the [illegible].	 [illegible] 1200 ± 10V 1220 ± 10V 1240 ± 10V 1260 ± 10V
E. Raster [illegible]	[illegible]	E1	[illegible]	Adjust VR552 to find the best point of the Blinking pattern.	[illegible]
F. FOCUS	□ [illegible]	F1 F2 F3	[illegible]	Turn the FOCUS VR of the [illegible] to make the focus of the peripheral section optimum. Note : This adjustment should be done by turning the [illegible] using a screwdriver.	

Note 1 : [illegible] before making necessary adjustment.

Note 2 : [illegible] at the right.

Note 3 : [illegible] on the screen of the [illegible]

Item Program Menu	◇ Test Meter ▼ Test Point ⎯ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
G H CENTER	⎯ RGB OFF (Sync signal only)		4	Adjust VR551 to get A = B	 Set the RASTER to the center with respect to the bezel. A - B ≦ 2 mm
I HV.SIZE, HV.POSI, V.POS (2)	⎯ Crosshatch	I1		Set the cell to the menu at left and press the [illegible].	
		I2		Set the cell to the adjusting mode [NTP(S)] and press the [illegible].	
		I3	1	Check to be sure that the input signal to the monitor is (H 28.5kHz) and (V 48.0Hz) and Press the [illegible].	H.SIZE 260 ± 4mm
⎯ Adjust VSR setting		I4		Set the cell to the following items, press the [illegible], and make necessary adjustment using the [illegible] and [illegible]. ① H SIZE, ② V SIZE, ③ H POS, ④ V POS, and ⑤ V POS	V.SIZE 195 ± 4mm HV.POS CENTER
		I5		After adjusting ① - ⑤, press the [E] and return to the menu of I2.	V.POS best point
				<Same as I2, I3, I4 and I5 except for the adjusting mode signal.>	
		I6	2	Adjusting mode [NTP(1)] input signal (H 33.0kHz)(V 77.1Hz)	
		I7	3	Adjusting mode [NTP(2)] input signal (H 64.0kHz)(V 103.0Hz)	
		I8	4	Adjusting mode [NTP(3)] input signal (H 64.5kHz)(V 182.0Hz)	
		I9		Press [E] to return to the main menu.	
J HV.SIZE, HV.POSI, V.POS (1)	⎯ Crosshatch	J1	MODE-43	Set the cell to the menu at left and press the [illegible].	
		J2	43	Check to be sure that the input signal is shown at left and press the [illegible].	
		J3		<Set the cell to the following items press the [illegible], and make J4 and J5.>	H.SIZE 260 ± 4mm
⎯ Adjust Factory preset		J4		Adjust the H SIZE, V SIZE, H POS and V POS to the best using [illegible] and [illegible].	V.SIZE 195 ± 4mm HV.POS CENTER
		J5		Set the V POS, V POS [illegible] and V POS [illegible] to the best using [illegible] and [illegible]. Press the [illegible] and [illegible] to return to the main menu.	
K V.POS	⎯ Crosshatch	K1	MODE-43	Check to be sure that the input signal is as shown at left. Set the cell to the menu at left and press the [illegible]. <Set the cell to the following items, press the [illegible], and make necessary adjustment.>	
⎯ Adjust User setting		K2		Set the [illegible], V POS CENTER and V POS [illegible] to the best using the [illegible] and [illegible].	
		K3		Press the [illegible] to return to the main menu.	

Item Program Menu	◇ Test Meter ▼ Test Point ⊏ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
L (HV SIZE, HV.POS), V.PCC (3)	⊏ Crosshatch	L1	MODE-43	Set the cell to the menu at left and press the [illegible].	
		L2		Check to be sure that the input signal to the monitor is [illegible] and [V 60.0Hz] and Press the [illegible].	H.SIZE 260 ± 4mm
4) Adjust Factory preset		L3		Set the cell to the following items, press the [illegible], and make adjustments as shown at right using the [illegible] and [illegible]. ① H.SIZE, ② V.SIZE, ③ H.POS, ④ V.POS, ⑤ V.PCC, ⑥ PARALLEL and ⑦ TRAPEZOID. Note: H.POSI and V.SIZE should use both modes, MSB and LSB.	V.SIZE 195 ± 4mm HV.POSI CENTER V.PCC best point
		L4		For details, refer to the description of adjusting screen image. After adjusting ① - ⑦, go to M5 using the [illegible] and [Y]. <Same as L2, L3 and L4 except for the input signal below>	
		L5	MODE-56	Input signal [H [illegible]] and [V 60.0Hz]	
		L6		After adjustment, go to L7 using the [illegible] and [illegible].	
		L7	MODE-57	Input signal [H [illegible]] and [V 60.0Hz]	
		L8		Return to the menu after adjustment using the [illegible] and [illegible].	
M [illegible] (HV SIZE, HV.POS, V.PCC (3)) Adjust Reservation timing	⊏ Crosshatch	M1	MODE-2, 3, 9, MODE-12, 15	<Same as L2, L3 and L4 except for the input signal below> MODE-2, 3, 9, 12, 15	
N [illegible]	⊏ Sync signal only (RGB OFF)	N1		Set the CONTRAST = MAX, BRIGHTNESS = CENTER and COLOR = 9300K using the OSD of the monitor set.	
Adjust OTHER menu		N2			
		N3		Set the cell to the menu at left and press the [illegible].	
		N4	MODE-43	Feed the signal at left pattern to the monitor set. Set the cell to the following items, press the [illegible], and move the cell to the data side. Then, make adjustment using [illegible] and [illegible] so that the point at which the back raster of each R, G or B glitters. ① LOW LIGHT 9300K, ② LOW LIGHT 6500K and ③ LOW LIGHT 9300K.	
		N5	MODE-43	Adjust screen VR and adjust to the point where the back raster is off.	(CONT MAX) Y=[illegible] ± [illegible] cd/m² X=0.281 ± 0.020 Y=0.311 ± 0.020
	⊏ [illegible] gradation [illegible]	N6		Switch over to the pattern at left and check to be sure that the [illegible] gradation is equally [illegible].	
	⊏ [illegible] window [illegible]	N7	MODE-43	Switch over to the pattern at left and bring the sensor of the analyzer to the center of the screen image (CONTRAST MAX).	
[illegible]	◇ COLOR ANALYZER	N8		Move the cell to the following items and make adjustment as shown at right using [illegible] and [illegible]. ① SUBCONT [illegible]K, ② SUBCONT 6500K, and ③ SUBCONT 9300K.	(CONT MIN) Y=[illegible] cd/m² X=0.[illegible] ± 0.020 Y=0.311 ± 0.020
		N9		Set the CONTRAST of the monitor set to the MIN and move the cell to the following cell. Then, make adjust as shown at right. ① LOW LIGHT 9300K, ② LOW LIGHT 6500K and ③ LOW LIGHT 9300K.	
		N10		Change the following data value to the same as [illegible] using the [illegible] and [illegible]. [illegible], [illegible] 9300K, [illegible] SUBCONT [illegible] and [illegible] SUBCONT 9300K, [illegible] LOW LIGHT [illegible], [illegible] LOW LIGHT 5500K and [illegible] LOW LIGHT [illegible].	(5500K) Y=[illegible] ± [illegible] cd/m² X=0.332 ± 0.020 Y=0.372 ± 0.020
		N11		Press the [illegible] to return to the main menu.	
		N12		Set the cell (Special ADJUST) to the menu at left and press the [illegible].	
		N13		Select [illegible] ADJUST from the menu.	
		N14		[illegible] press [Y].	
		N15		Press [illegible] to return to [illegible], then press [illegible] to return to the main menu.	

Item Program Menu	◇ Test Meter ▼ Test Point — Pattern	JOG CODE	Input Signal	Operation	Adjusting Value
O ABL	□ Totally white pattern	O1		Set the CONTRAST → MAX, BRIGHTNESS CENTER, COLOR → 9300K using the OSD of the monitor set.	
Adjust OTHER setting	◇ TV COLOR ANALYZER II	O2			
		O3		Set the cursor to the item at left and press the [illegible].	Y=150cd/m² ±10~5
				Feed the signal at left and bring the sensor of the analyzer to the screen image center.	
		O4	MODE-43		
		O5		Move the cursor to ABL 9300K and adjust as shown at right.	
		O6		Change the ABL 6500K data values the same as ABL 9300K using [illegible] and [illegible].	
				Press [illegible] to return to the main menu.	
P INPUT 1.0 SETTING	□ Totally white pattern	P1	MODE-43	Set the cursor to the menu at left and press the [illegible].	
[illegible] ADJUST		P2		Select [illegible] VIDEO 1.0V ADJUST from the menu.	
		P3		Set the CONTRAST MAX and VIDEO INPUT 1.0V using the OSD of the monitor set.	
				Press the [illegible] against the message of "hit return key".	
		P4		Press the [illegible] as other message is displayed.	
		P5		Press the [illegible] to return to the menu of O7 and return	
		P6		to the main menu using the [illegible].	
Q FINAL SETTING		Q1	MODE-43	Set the cursor to the menu at left and press the [illegible].	
[illegible]		Q2		Select the 9_FINAL TUNE from the menu.	
		Q3		Press either Y or N when the message of "CANCEL USER PRESET DATA (y/n)" has been output after a while.	
		Q4		[illegible] against the message of SELECT FLAG [illegible]	
		Q5		Press the [illegible] to return to the menu of P7 and return to the main menu using the [illegible].	
R DATA SAVING		R1		Set the cursor to the menu at left and press the [illegible]	
[illegible]		R2		key in the file name after [illegible].	
				Use SERIAL No. as a file name. (EXAMPLE: [illegible].DAT)	

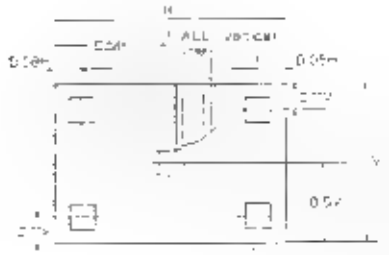
CHECK ITEM

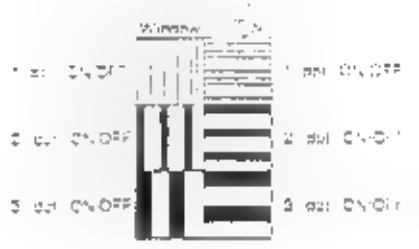
These items are intended for a recheck after adjustment and for a check of the following function operations:

1. Resolution check
2. Brightness variation check
3. Gradation check
4. Brightness check
5. Deflection linearity check
6. Distortion check
7. Image stability check
8. Blinking image check
9. Circuit operation check
10. Specific function check
11. Power save function check

1. Resolution Check

(1) Apply resolution check pattern





(2) Check with the normal signal and inverted signal. Check to be sure that display color between dots is uniform and that there are no color difference and spotty display color.

(3) Check the entire image quality including resolution

2. Brightness Variation Check

(1) Cause the white full dot pattern to be displayed with the Mode-57 signal.

(2) Set the contrast to a maximum.
Set the brightness to the center.

(3) Make sure that a brightness difference between the center and periphery is ≤ 65% with the horizontal magnetic field in the condition of ± 30 eT.

3. Gradation Check

(1) Cause the 16 grayscale to be displayed with the Mode-40 signal. (White gradation waves.)

(2) Set the contrast to a maximum and the brightness to the center.

(3) At this time the 1st gradation (black level) cannot be seen and the 2nd gradation must be barely lit.

(4) With the brightness set to the center, vary the contrast from the maximum point and the gradation tracking must be good at that time.

Note: If tint (particularly the gray, which is a middle color) is different, make adjustment of the white balance once again.

(5) With the contrast set to a maximum, vary the brightness from the maximum point to the minimum point and check to be sure that the brightness of the low gradation portion changes.

Note: Check both the color select 9300K and 6550K.

4. Brightness Check

(1) Cause the white full-flat field pattern to be displayed with the Mode-43 signal.

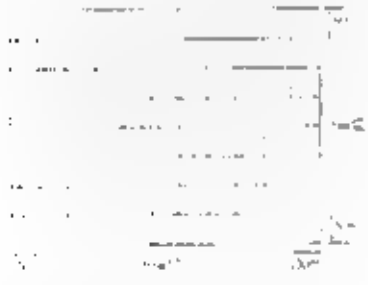
(2) Make sure that the brightness value is < 15 cd/m² when the contrast is set to a minimum and the brightness is to the center.

5. Deflection Linearity Check

(1) Display the green only crosshatch pattern.

Horizontal linearity $\frac{X\ max. - X\ min.}{X\ max. + X\ min.} \times 100\%$

Vertical linearity $\frac{Y\ max. - Y\ min.}{Y\ max. + Y\ min.} \times 100\%$



(2) To confirm the horizontal deflection linearity, proceed as specified in the following mode:

MODE-5, MODE-6 } etc.
MODE-41, MODE-43 }

To confirm the vertical deflection linearity, proceed as specified in the following mode:

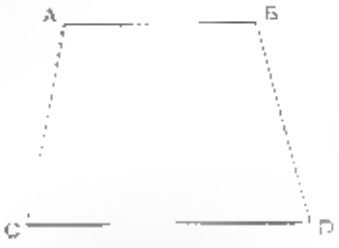
MODE- } etc.
MODE- }

6. Distortion Check

(1) Apply the signal of the following mode and supply the green crosshatch pattern.
Mode-56
Mode-57
Mode-43

(2) Make sure that each value comes within the values indicated below.

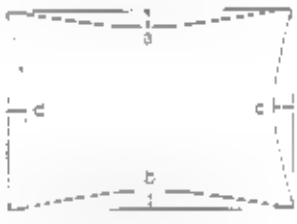
• Total distortion



$\left|\frac{AC-BD}{AC+BD}\right| \times 100 \leq 1.5\%$

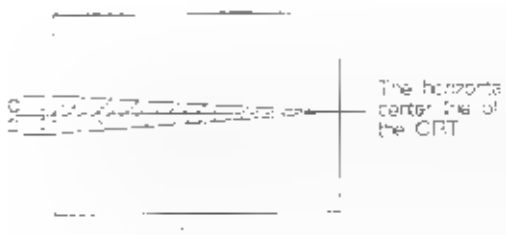
$\left|\frac{AB-CD}{AB-CD}\right| \times 100 \leq 1.2\%$

• Pincushion



a, b, c, d ≤ 2.0 mm

• Rotation



C, D ≤ 2.5 mm

7. Image Stability Check

(1) Check to be sure that the size variations are < 2 mm for horizontal size and < 1.5 mm for vertical size when the white full dot pattern of Mode-56 Mode-43 is displayed and the AC voltage is changed to 90 ~ 264 V.

(2) Make sure that the size variations are < 2mm for horizontal size and < 1.5 mm for vertical size when contrast is changed to a minimum from maximum at the AC voltage of 120V/240V

8. Blinking Image Check

(1) Apply blinking pattern signal (100%)

(2) Check the picture stability at Mode-1 and Mode-3. Check if image change due to blinking meets the standards below using the microscope.

9. Circuit Operation Check

(1) Check the protection operation at fH not covered in the specifications.

(2) Apply fh = 28 KHz and 66KHz signal and check to be sure that sync flows.

10. Specific Function Check

(1) Create the crosshatch pattern using the Mode-3 signal of the preset timing

(2) Vary the vertical size and the deviation of the horizontal size and check to be sure that the horizontal size and horizontal position variations meet the values given below.

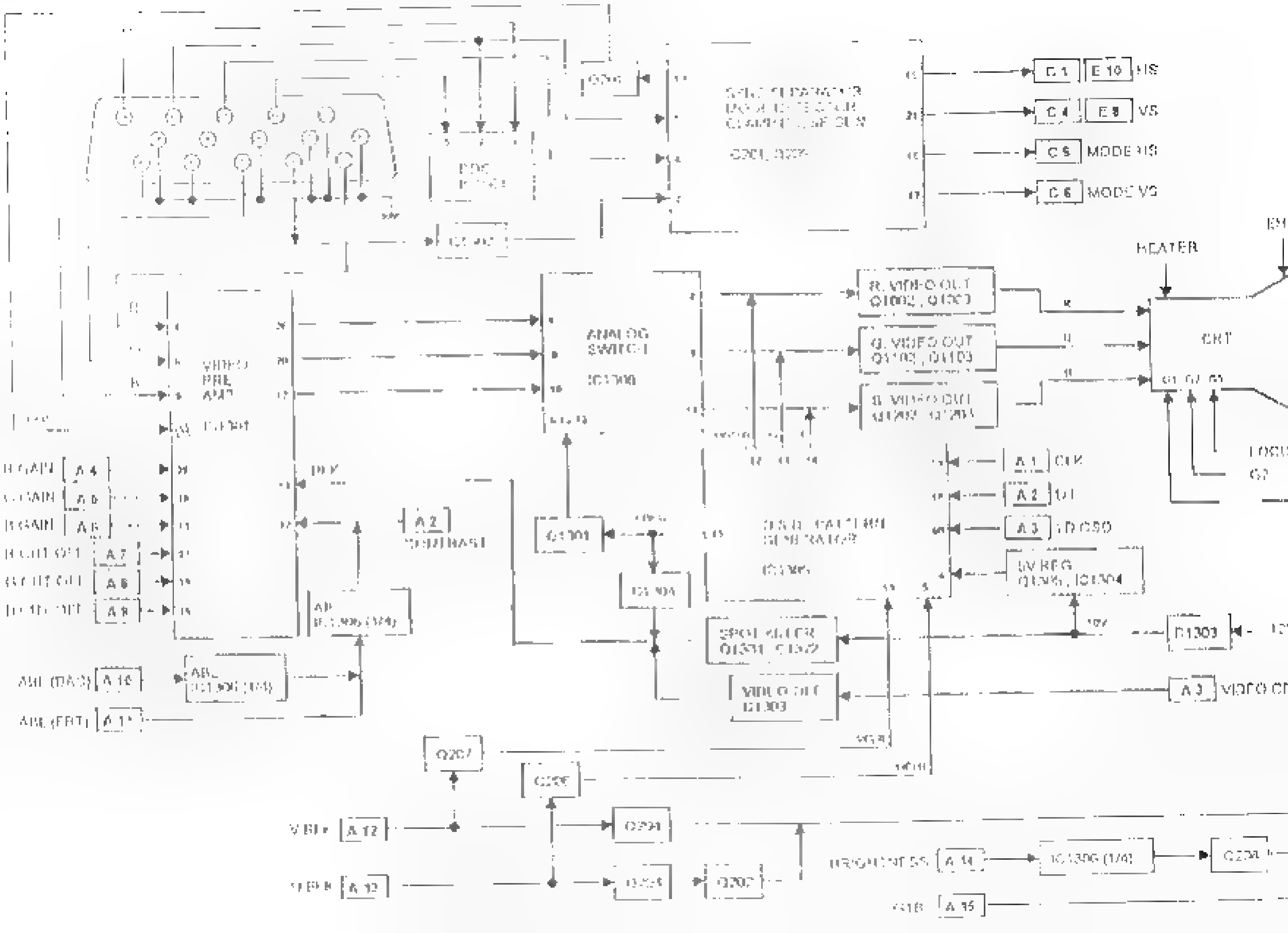
Vertical size	→ +/- 20 mm or more
Vertical position	→ up and down 5mm or more
Horizontal size	— MIN. ≤ 250 mm MAX. ≥ 260 mm
Horizontal position	— left 20 mm or more
Horizontal position	— right 20 mm or more

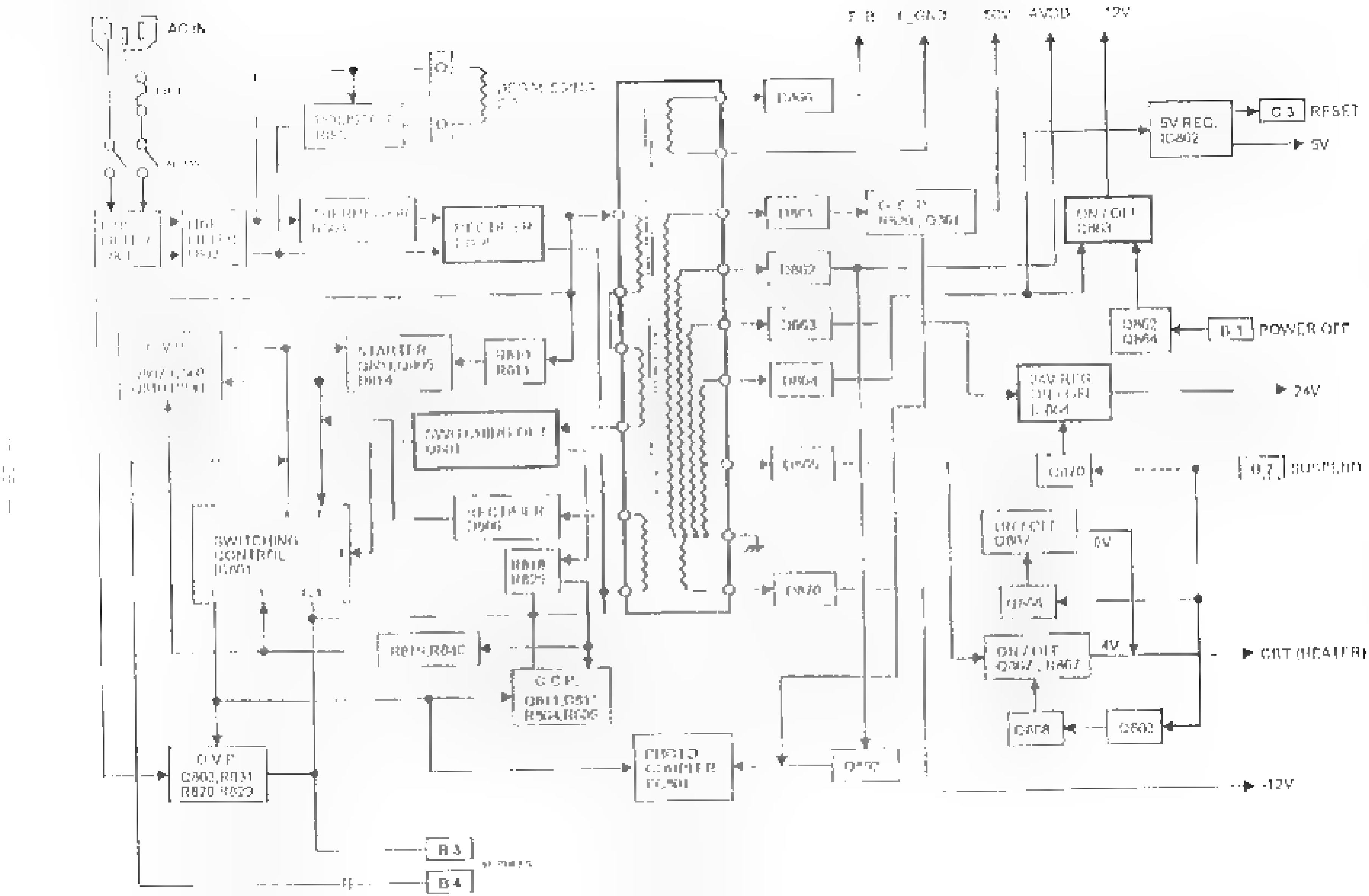
11. Power Save Function Check

The power consumption must meet the specified one when the horizontal/vertical sync signals are changed as shown below.

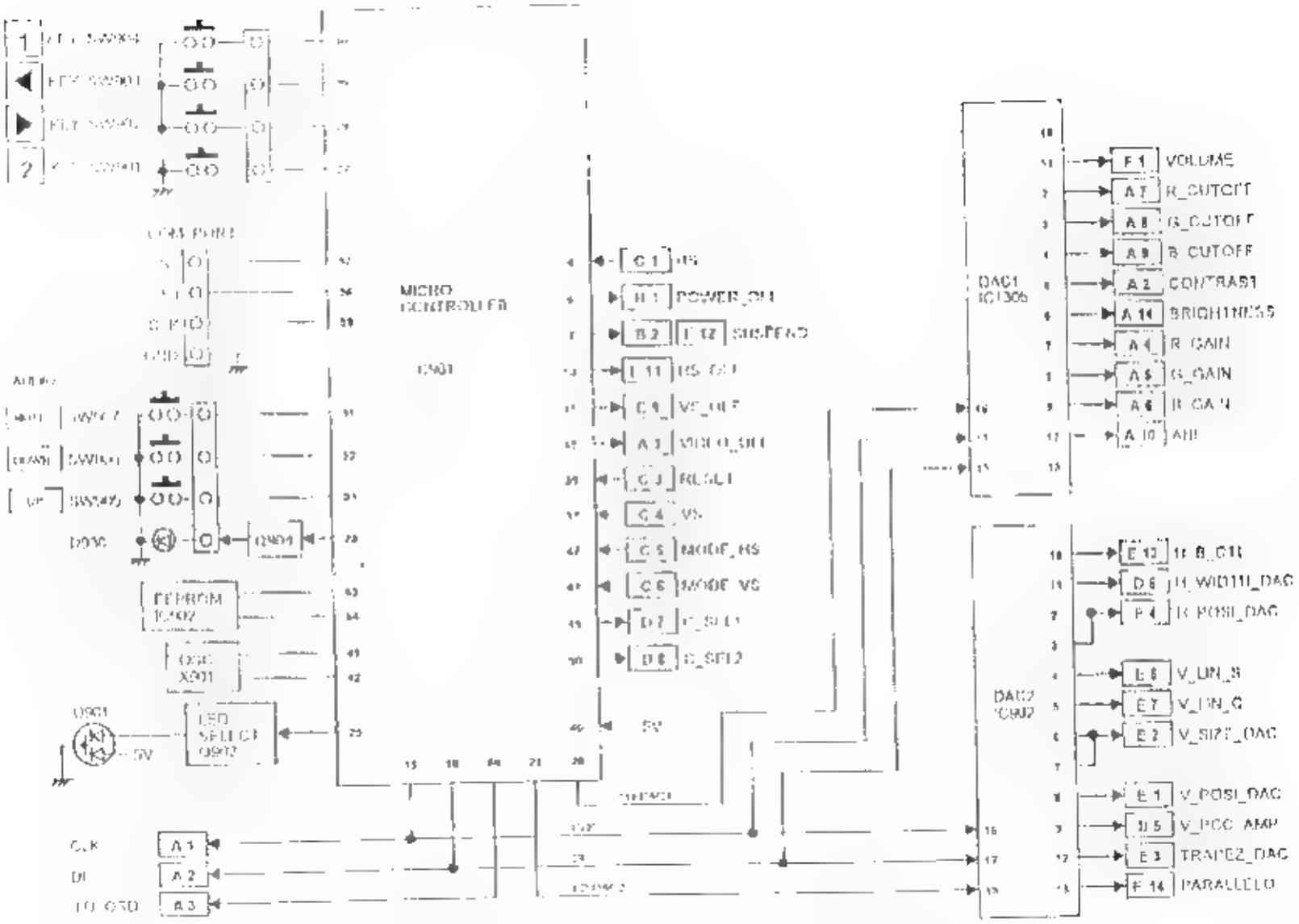
H.SYNC	OFF	ON	OFF
V.SYNC	ON	OFF	OFF
SPEC	< 30W	< 30W	< 8W

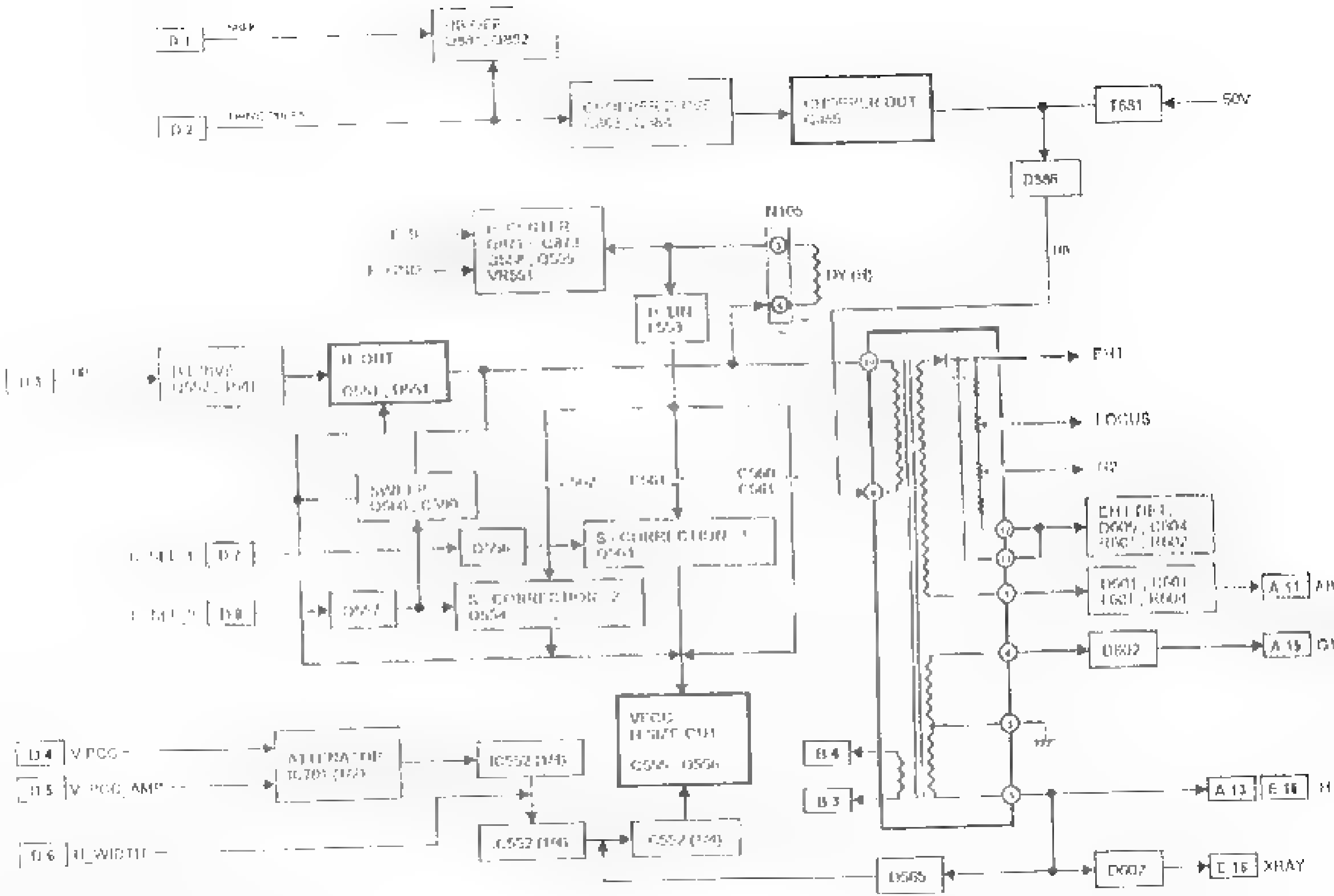
SIGNAL INPUT / VIDEO / SYNC SEPARATE



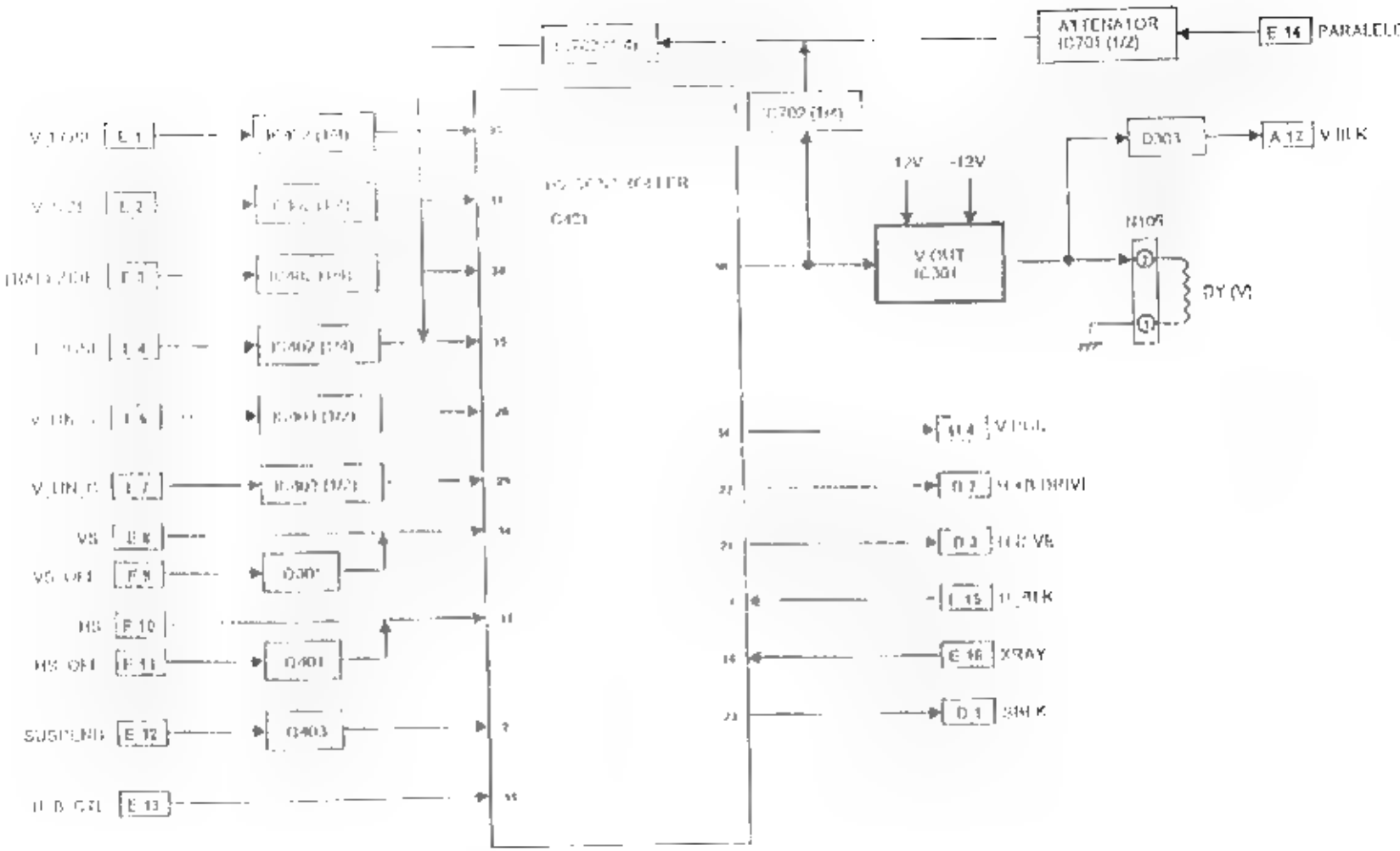


AC IN
F.B
I_GND
12V
5V REG.
IC802
C 3
RESET
5V
ON / OFF
Q863
POWER OFF
24V REG
24V
SUSPEND
CRT (HEATER)
-12V
SWITCHING
CONTROL
STARTER
RECTIFIER
O.C.P.
O.V.P.
PHOTO
COUPLER
B 3
B 4
4V
6V

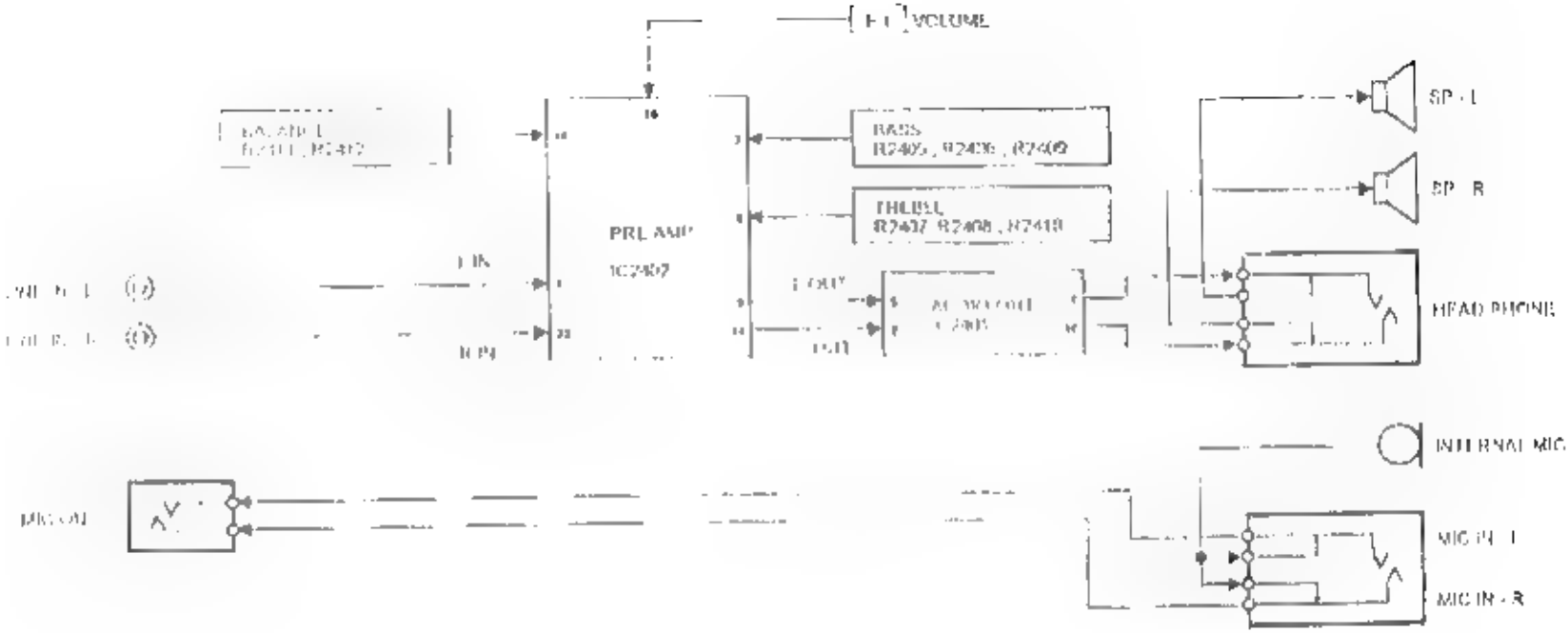

MICRO CONTROLLER
IC901
DAC1 IC1306
DAC2 IC902
EEPROM IC902
LSI SELECT Q902
VOLUME
R_CUTOFF
G_CUTOFF
B_CUTOFF
CONTRAST
BRIGHTNESS
R_GAIN
G_GAIN
B_GAIN
V_DRIVE_G
V_DRIVE_B
V_POSI_DAC
V_PCC_AMP
TRAPEZ_DAC
PARALLEL0
CLK
DI
DO
5V

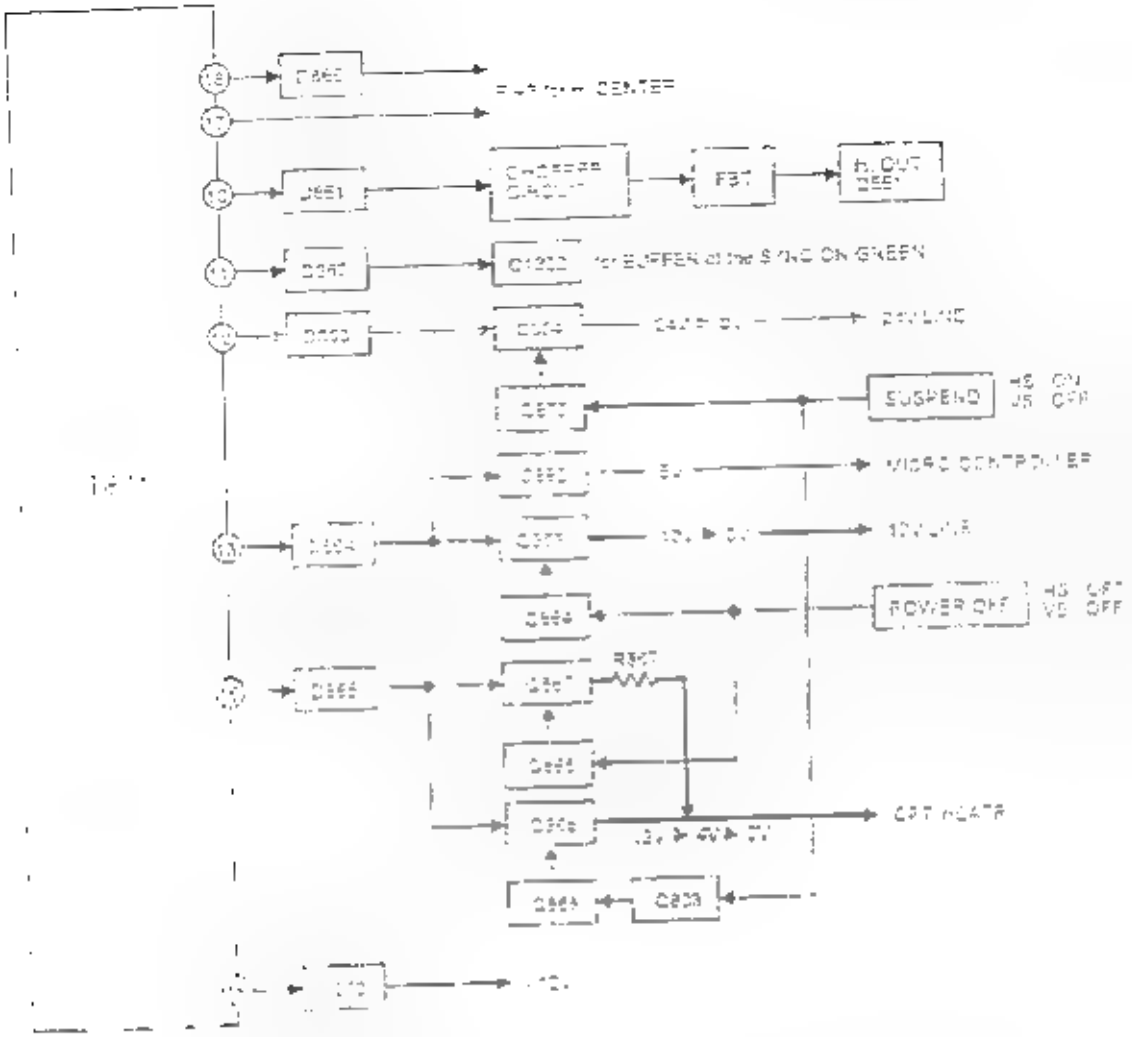


D 1
D 2
D 3
D 4
D 5
D 6
D 7
D 8
V PCC
V PCC AMP
H WIDTH
CHOPPER OUT
Q565
T651
50V
D586
N105
DY (H)
H OUT
Q551, Q561
S CORRECTION 1
S CORRECTION 2
Q554
VFCC
H SIZE CTL
ALTERNATOR
IC701
EHT
FOCUS
G2
D602
A 11
A 15
A 13
E 16
D607
E 15
XRAY
D565
B 4
B 3


ALTERNATOR
IC701 (1/2)
E 14
PARALELO
D303
A 12
V BLK
12V
-12V
V OUT
IC301
N105
DY (V)
E 1
E 2
E 3
E 4
E 5
E 7
E 8
E 9
E 10
E 11
E 12
E 13
Q401
Q403
SUSPEND
D 4
V FOCUS
D 2
D 3
E 15
E 16
XRAY
D 1
BLK

AUDIO CONTROL





TRUTH TABLE FOR D.P.M.S

	SYNC SIGNAL		D.P.M.S. SIGNAL	
	H. SYNC	V. SYNC	SUSPEND	POWER OFF
NORMAL	NORMAL	NORMAL	LOW	HIGH
STAND BY	OFF	NORMAL	HIGH	HIGH
SUSPEND	NORMAL	OFF	HIGH	HIGH
POWER OFF	OFF	OFF	HIGH	LOW

SERVICE WARNING

TO PREVENT RISK OF AN ELECTRIC HAZARD, TEST BEFORE TOUCHING. Where, after operation of the fuse in the live side of the main power supply, some components of the equipment that remain under voltage might represent a hazard during servicing.

GENERAL INFORMATION

1. OUTLINE

This is a 15" color FS (flat square) CRT display with the following 11 features.
Stero Dome Speakers with 2W+2W output and mic function are mounted on monitor, and Headphone is available to use.
This monitor also has OSD (on screen display) control and Power saving function based on VESA DPMS.

2. FEATURES

2.1 Stereo Dome Speakers

- High quality stereo sound by ViewSonic Domes Speaker system.
- Audio typical output 2W +2W (electric).
- THD (Total Harmonic Distortion) maximum 1.0% (output = 1.0W).

2.2 Mic function

A microphone is installed on the front panel of monitor for sending voice message to computer system. A ext. microphone jack is mounted on left side of monitor for additional use.

2.3 Headphone function

Headphone jack is also mounted on left side of monitor to enjoy music, conversation and entertainment.

2.4 Power Saving

Built in Power Saving function based on VESA-DPMS proposal.
Power energy shall be saved by controlling the circuit in accordance with power save signal from computer.

2.5 OSD function

OSD (on screen display) function is new and convenient man machine interface.
Any one is able to set up the picture as he like through OSD menu.

2.6 Self-Test function

Self Testing picture comes out by pushing F1-key in the case of no connection with computer or power saving operation.
This function shows if monitor is alive or not and can be used for self again test.

2.7 VESA DDC 1/2B

Compliant with VESA DDC standard and applicable to DDC 1/2B uni-directional only.

2.8 Ergonomics design

- Low emission design to meet with MPR II .
- ESF (Electro static field) free coating on CRT.

2.9 Multi scan with digital technology

- 8 bit micro-computer controls the circuit operation to meet with wide range signal of fh= 30~69 KHz and fv= 50~160 Hz. So VESA640 X 480, VESA800 X 600, VESA1024 X 768 and 1280 X 1024 modes are applicable.

2.10 3 Factory presets (+5 Reservation), 8 user memories

- 3 standard modes are preset at the factory.
- 5 modes are reserved at the factory.
- 8 user memories are available to set the users own timing and display information.

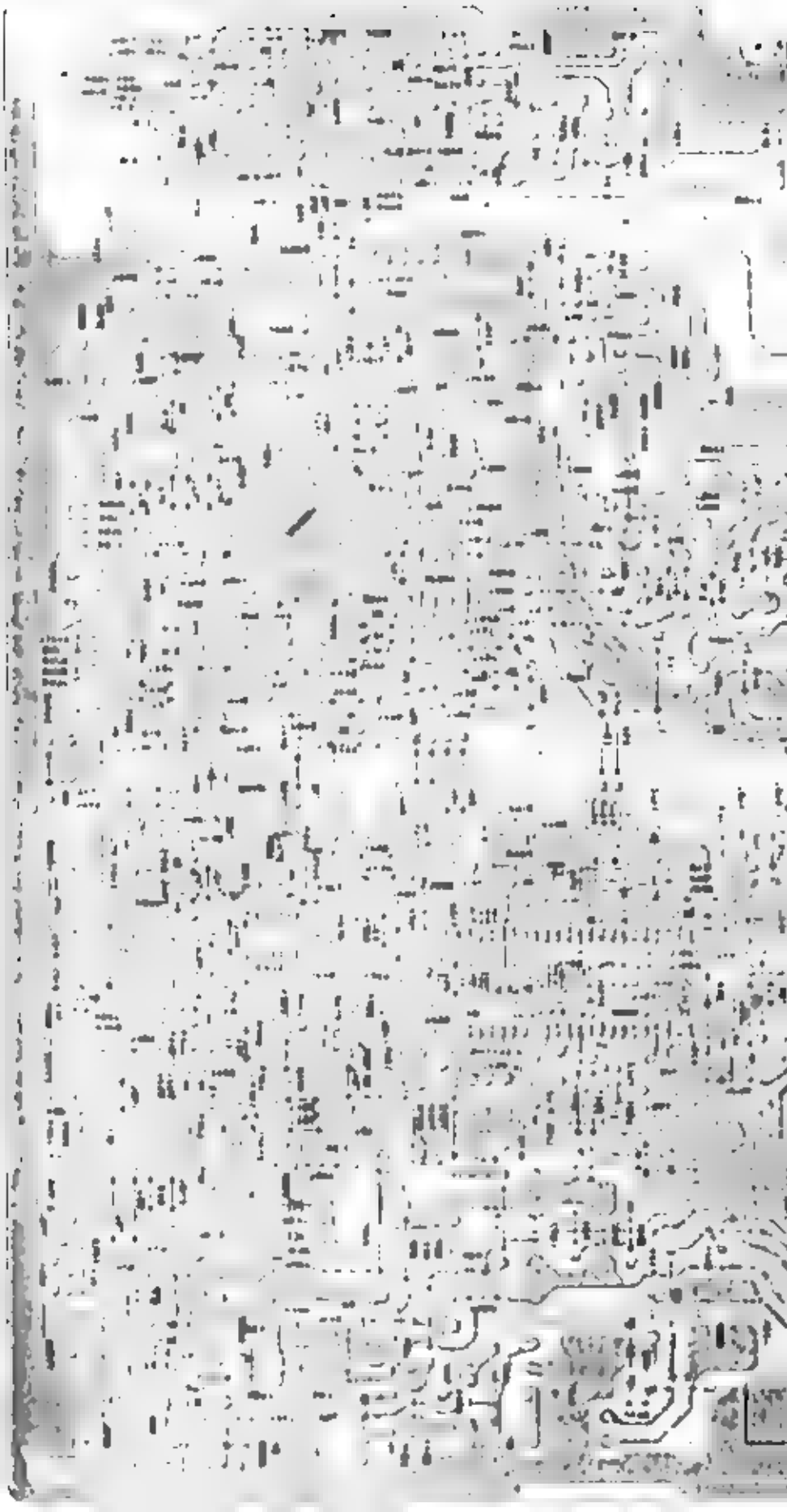
2.11 Flat face and fine dot pitch

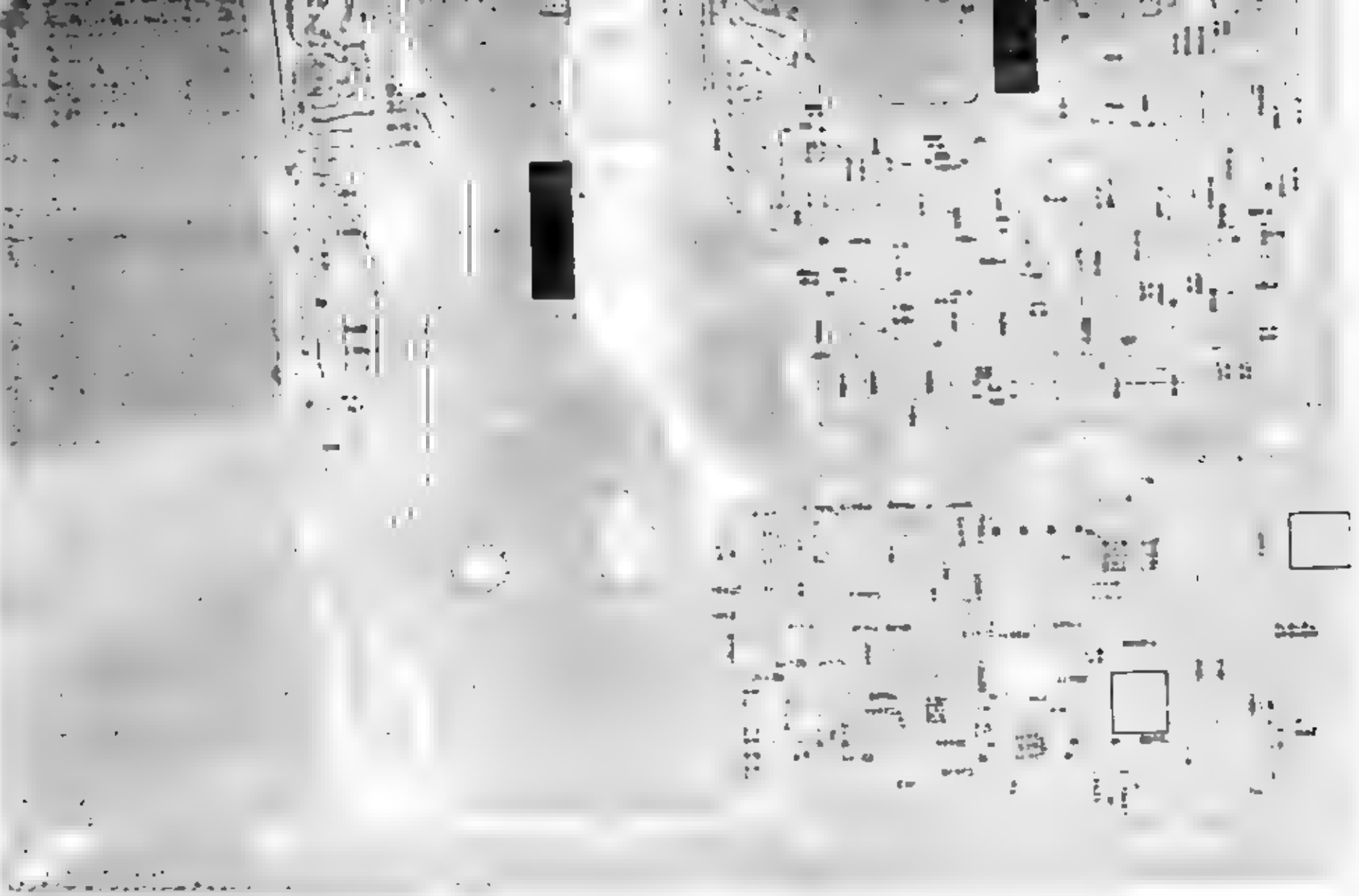
Flat face CRT with fine dot pitch 0.27mm gives comfortable sight of the screen.

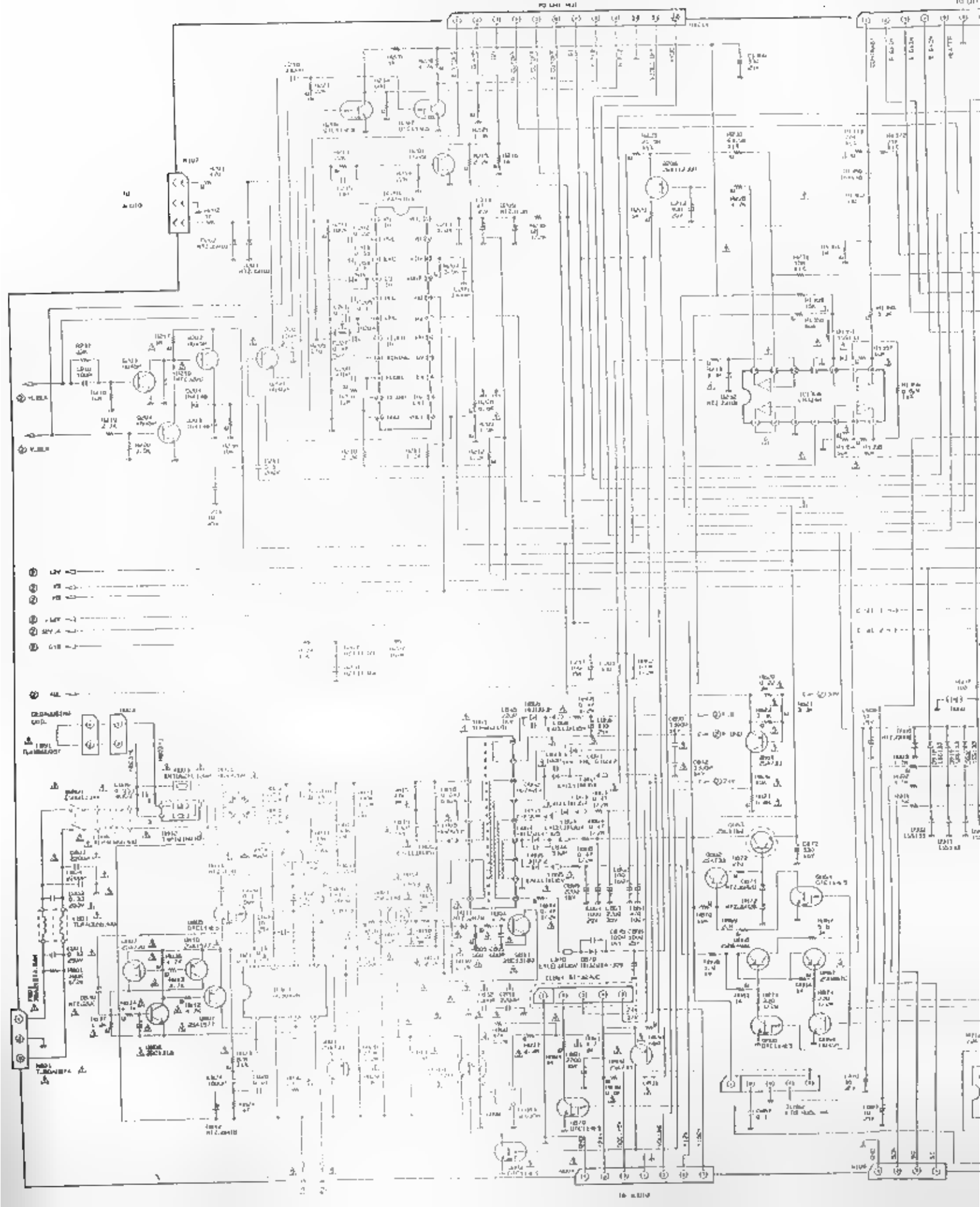
2.12 Superior display performance

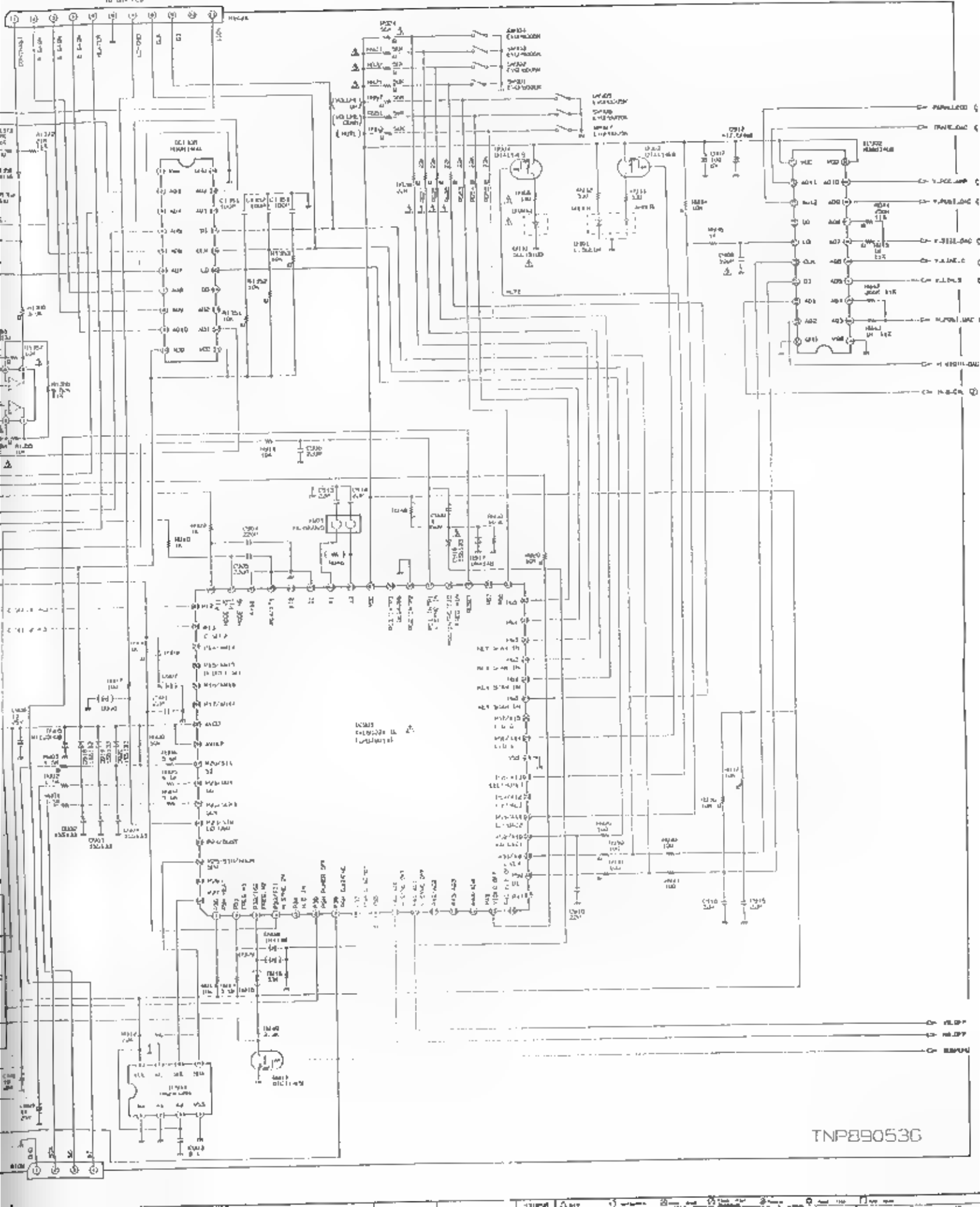
- High contrast.
- Minimized distortion by correction circuit.
- Good convergence.
- Users enjoy full scan image for graphics.

MAIN BOARD





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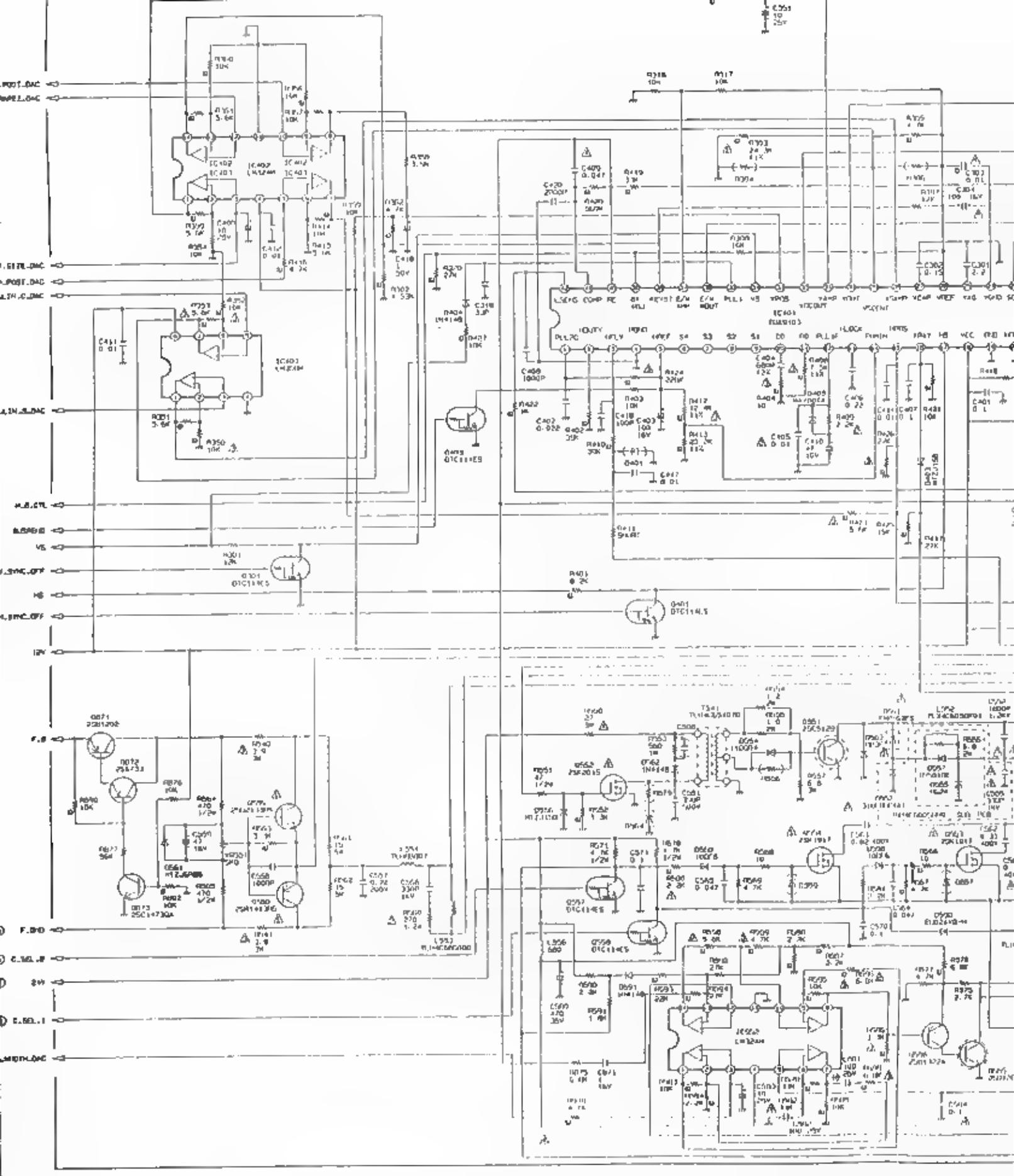
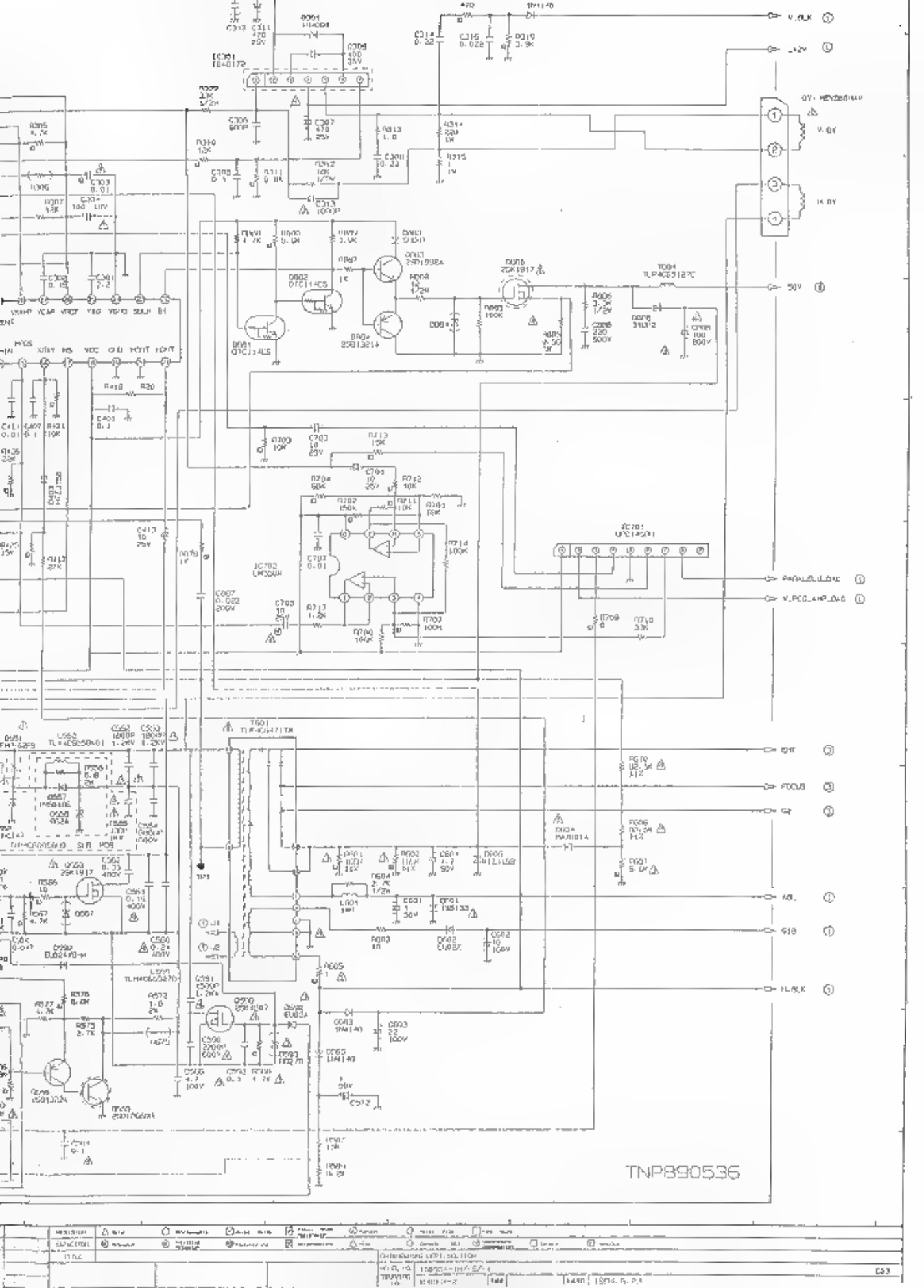
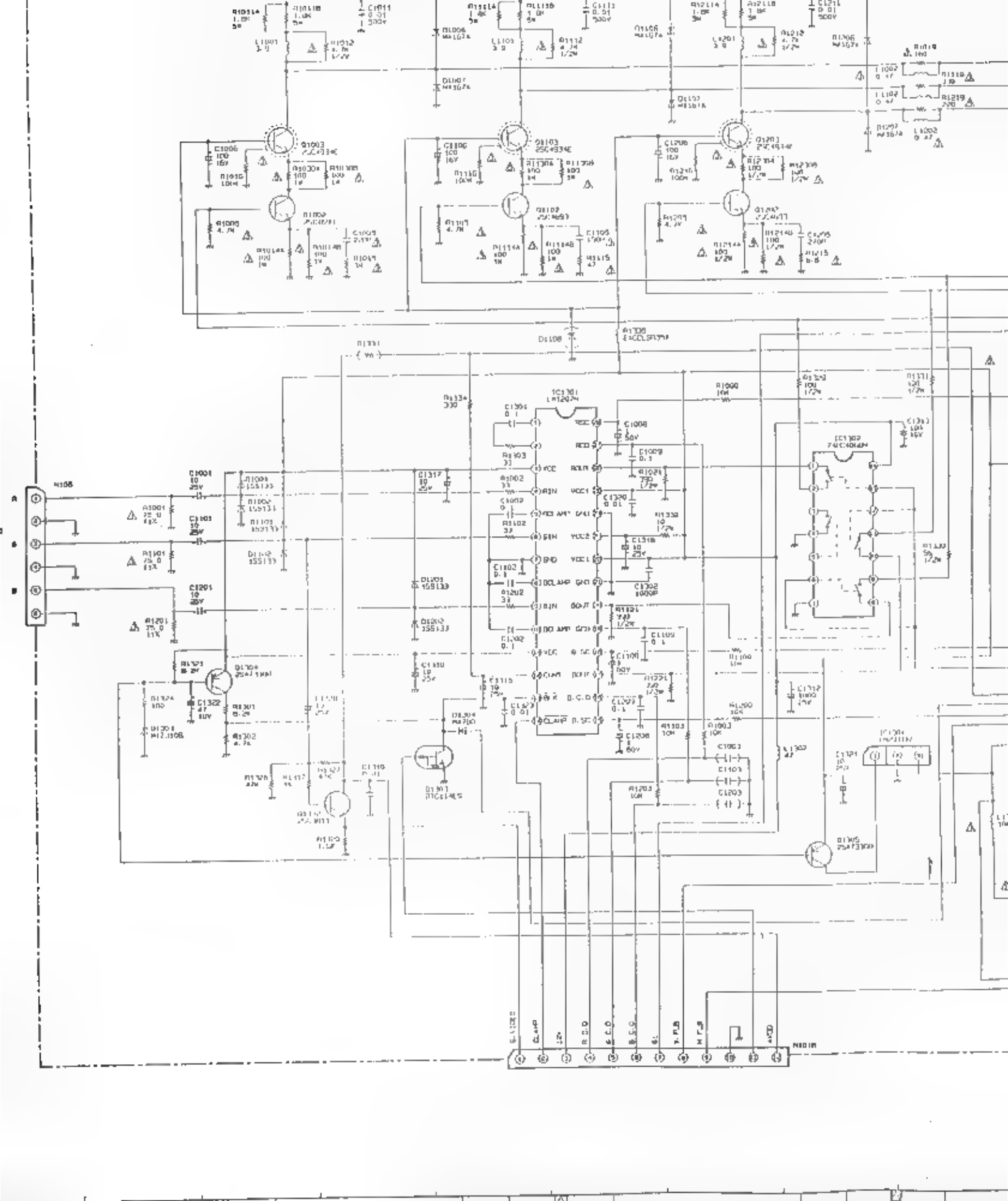
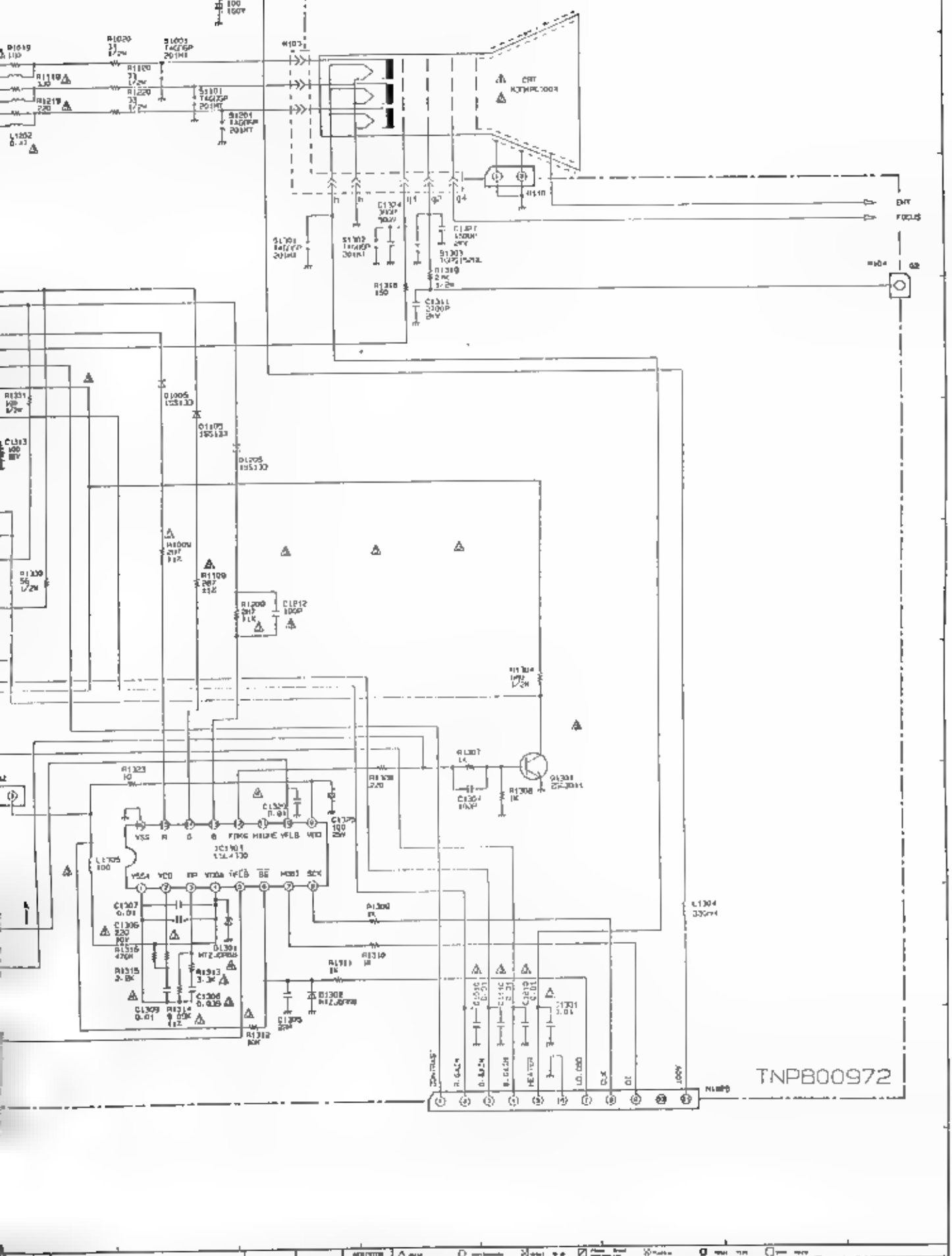
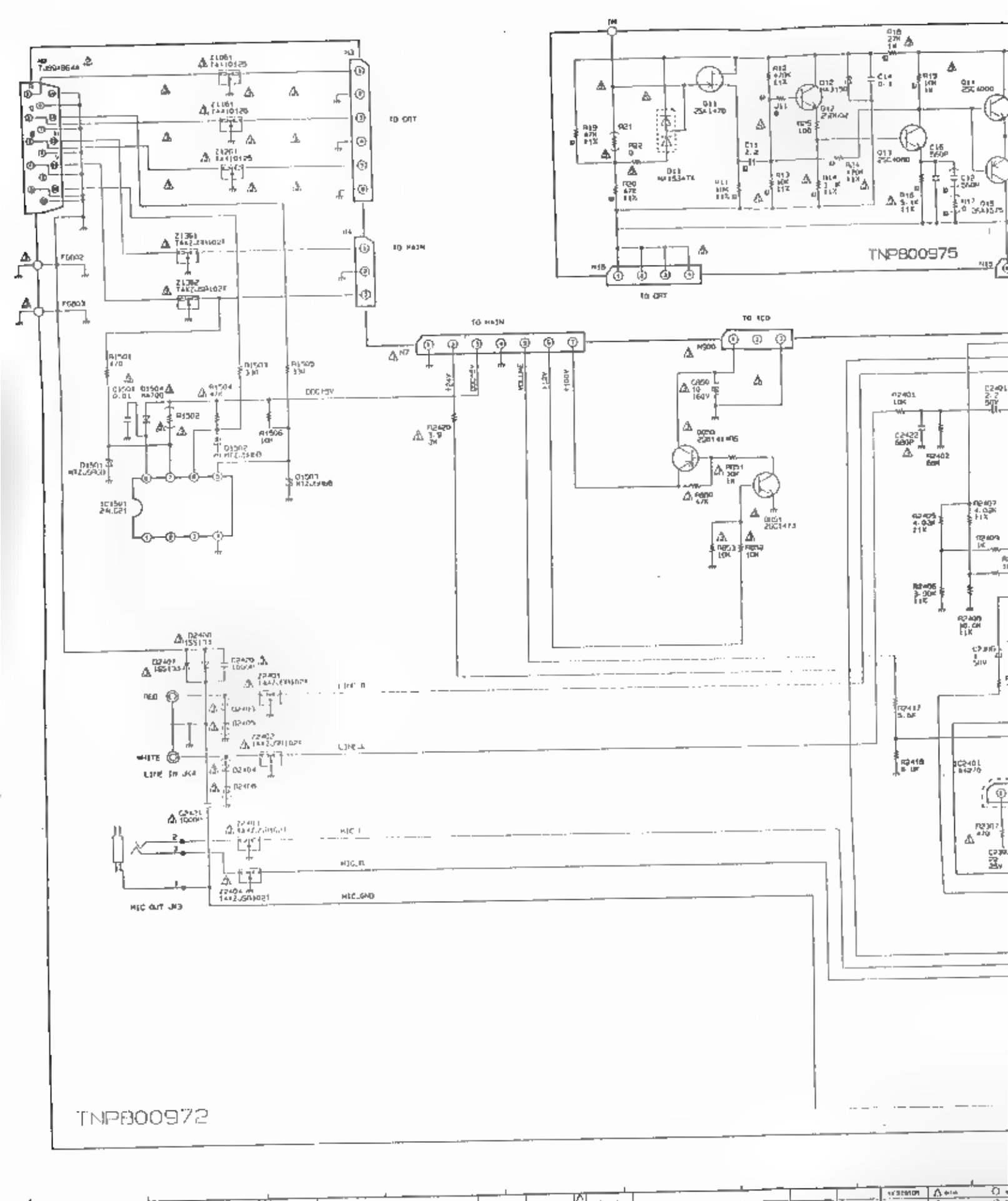
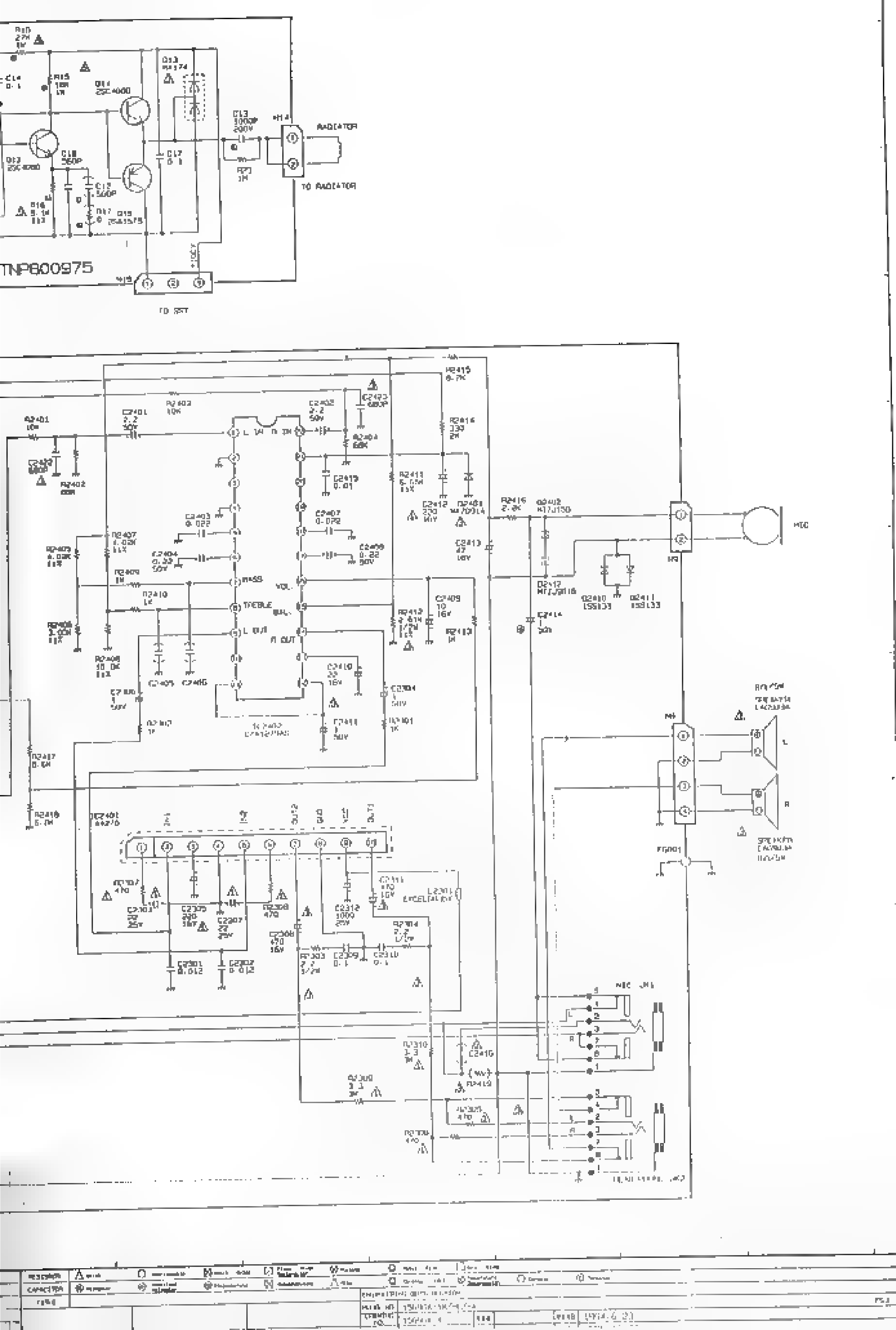



TNP830536



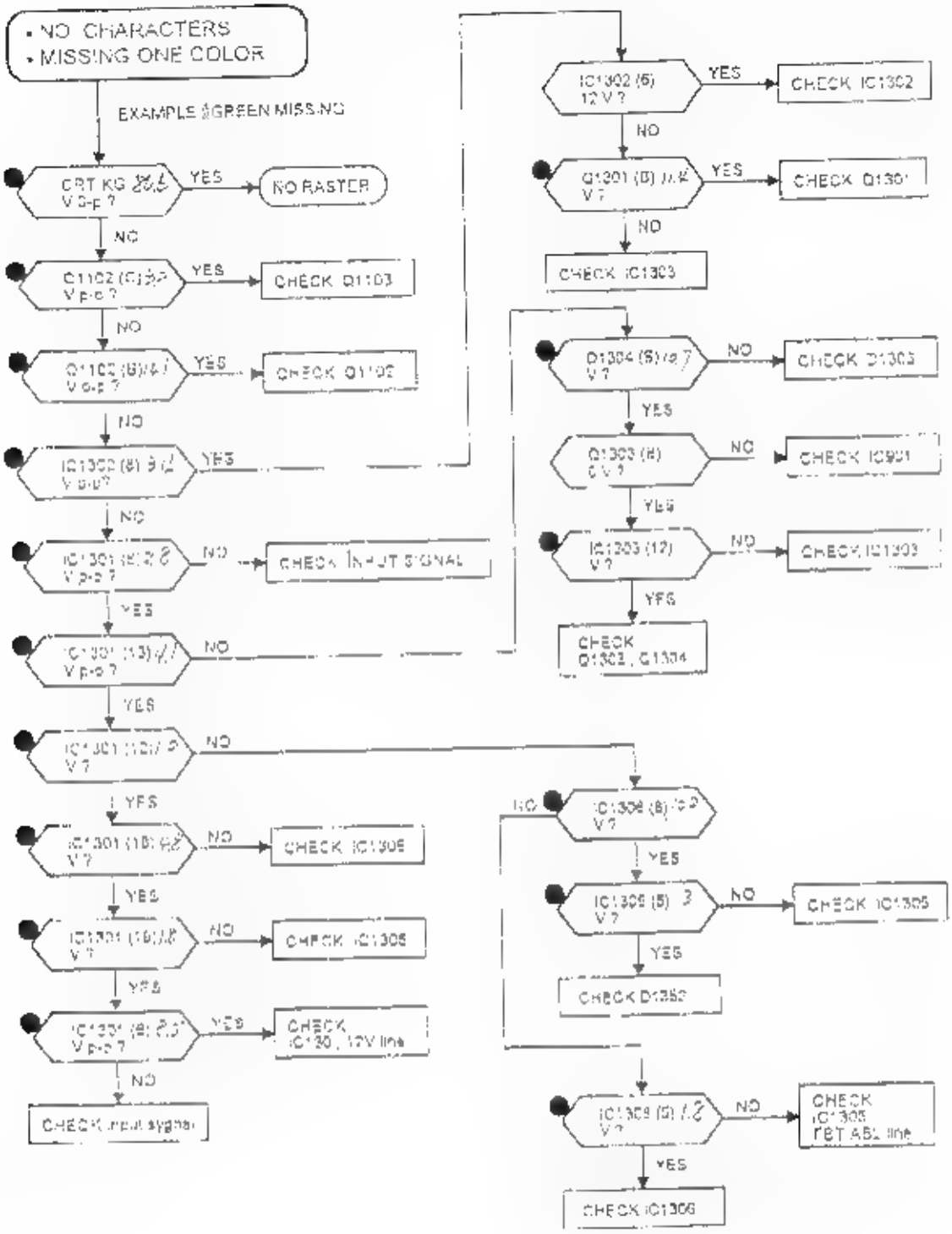

CRT
FOCUS
TNP800972

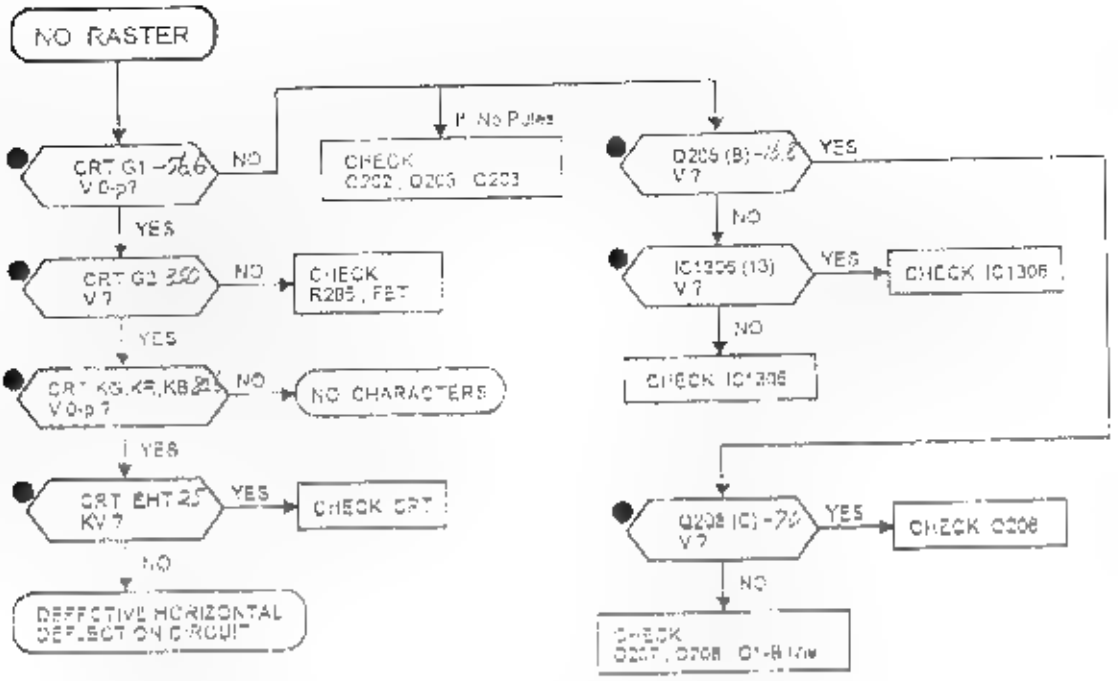

TO MAIN
TO LCD
TO KEY
TO MAIN
TNP800975
TNP800972
DOG HSY
VOLUME
LINE IN
LINE IN JK4
MIC IN
MIC OUT JK3
MIC_GND
RED
WHITE

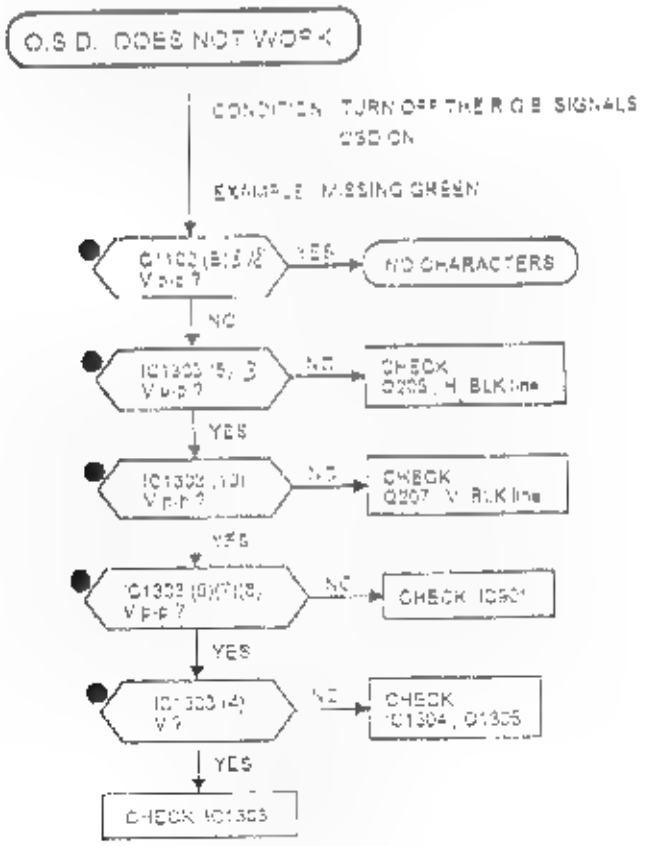


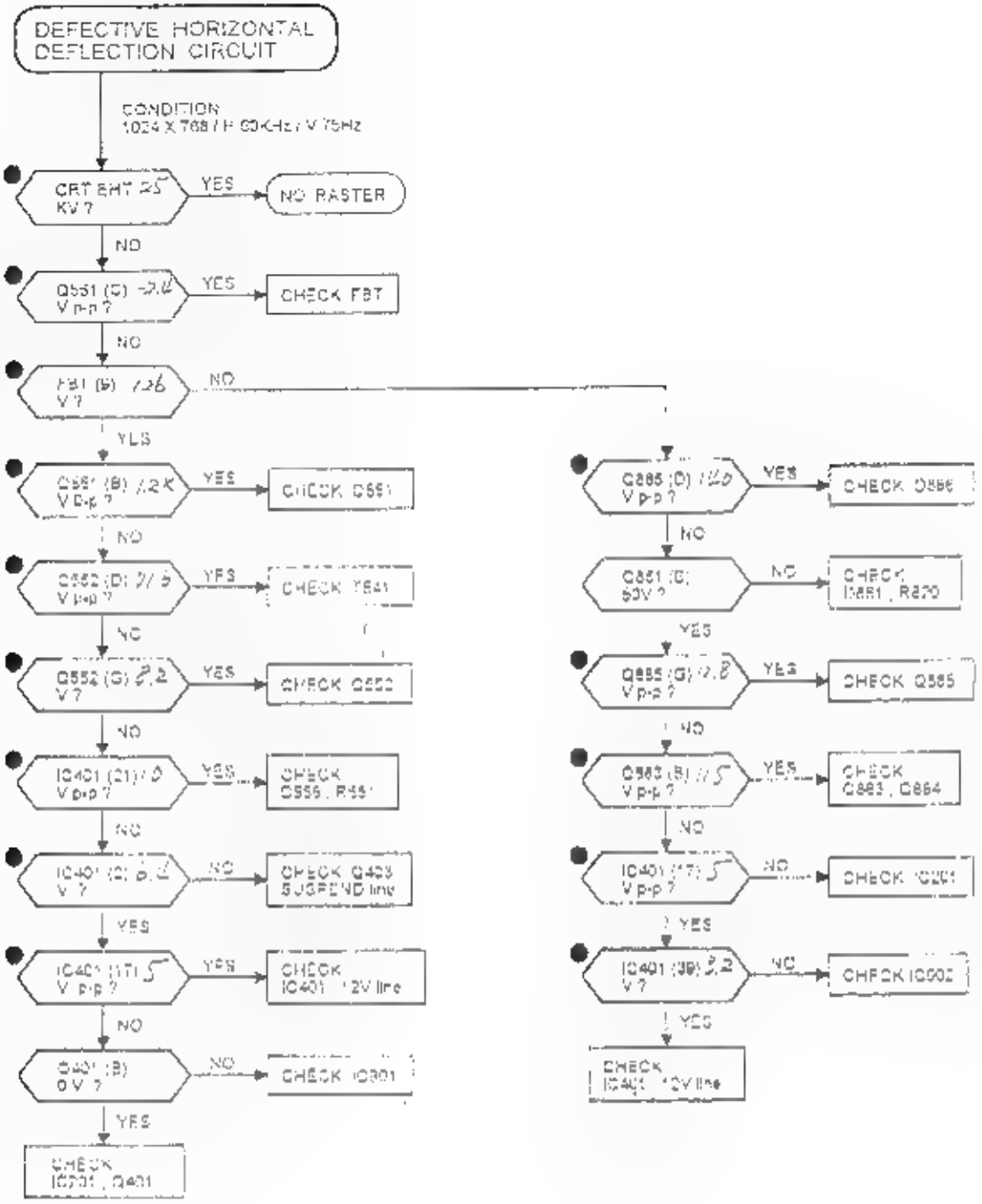
TNP800975
RADIATOR
TO RADIATOR
TO SET
MIC
BASS
TREBLE
VOL
L OUT
R OUT
RESISTOR
CAPACITOR

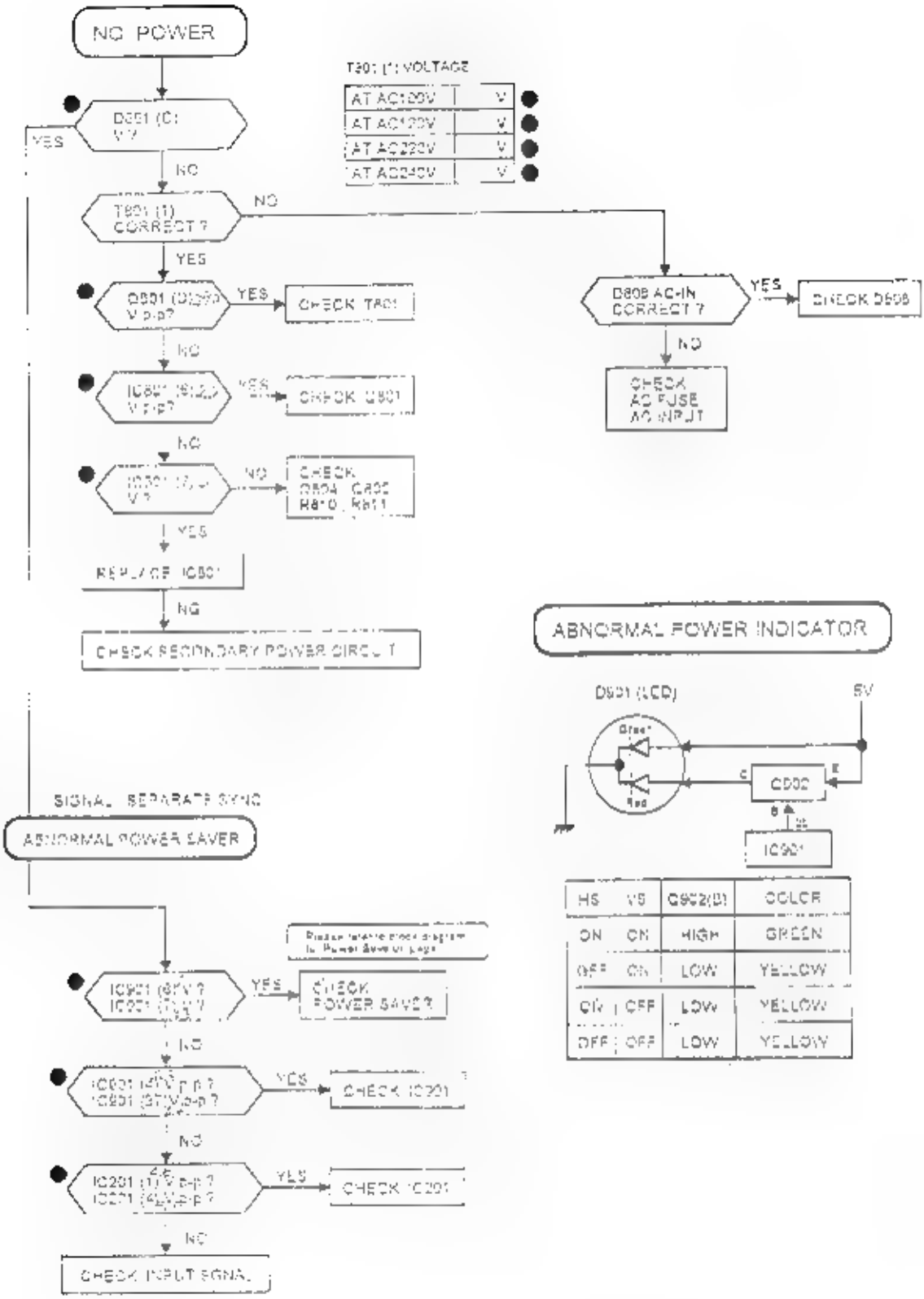
TROUBLESHOOTING HINTS

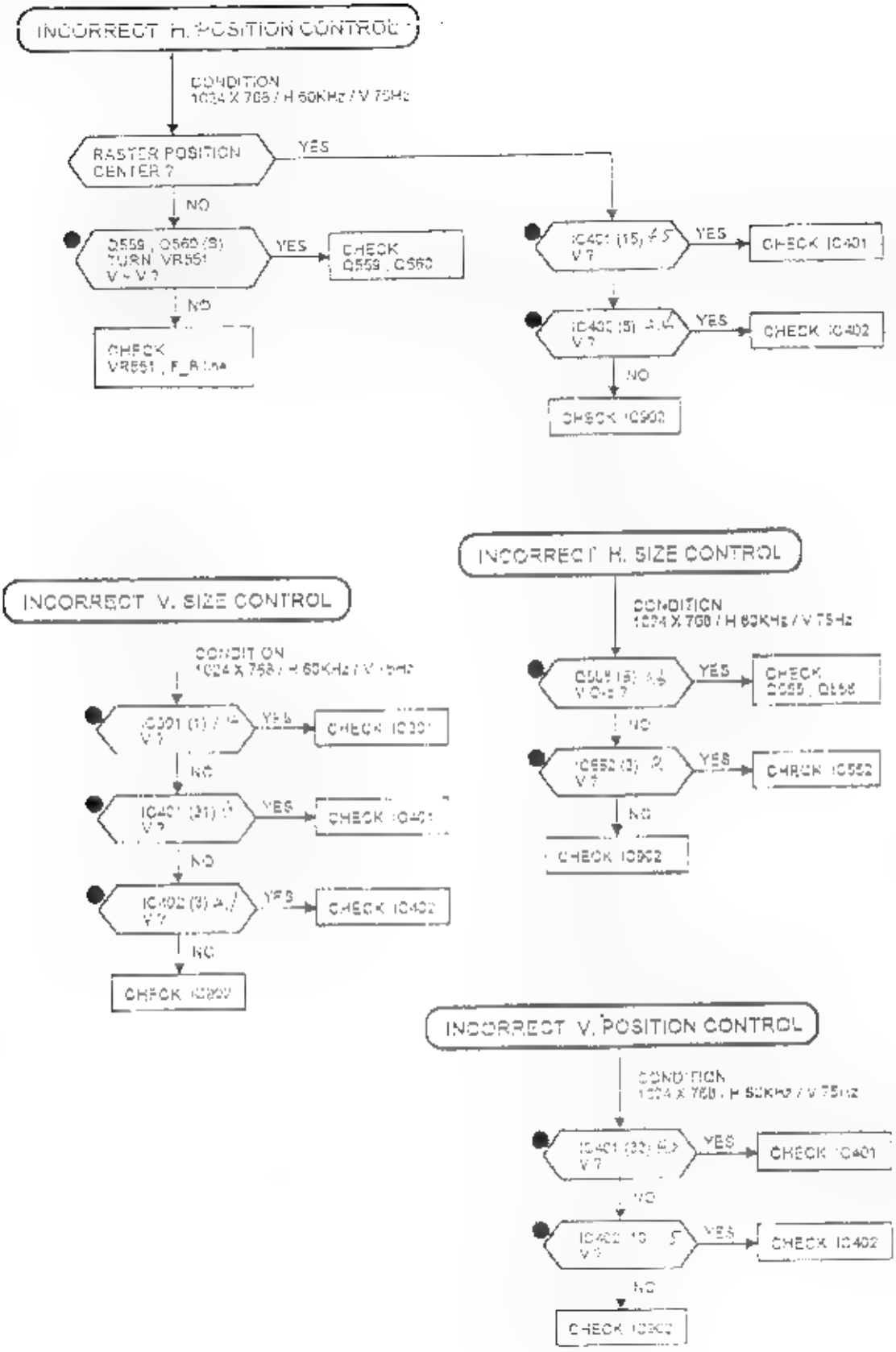


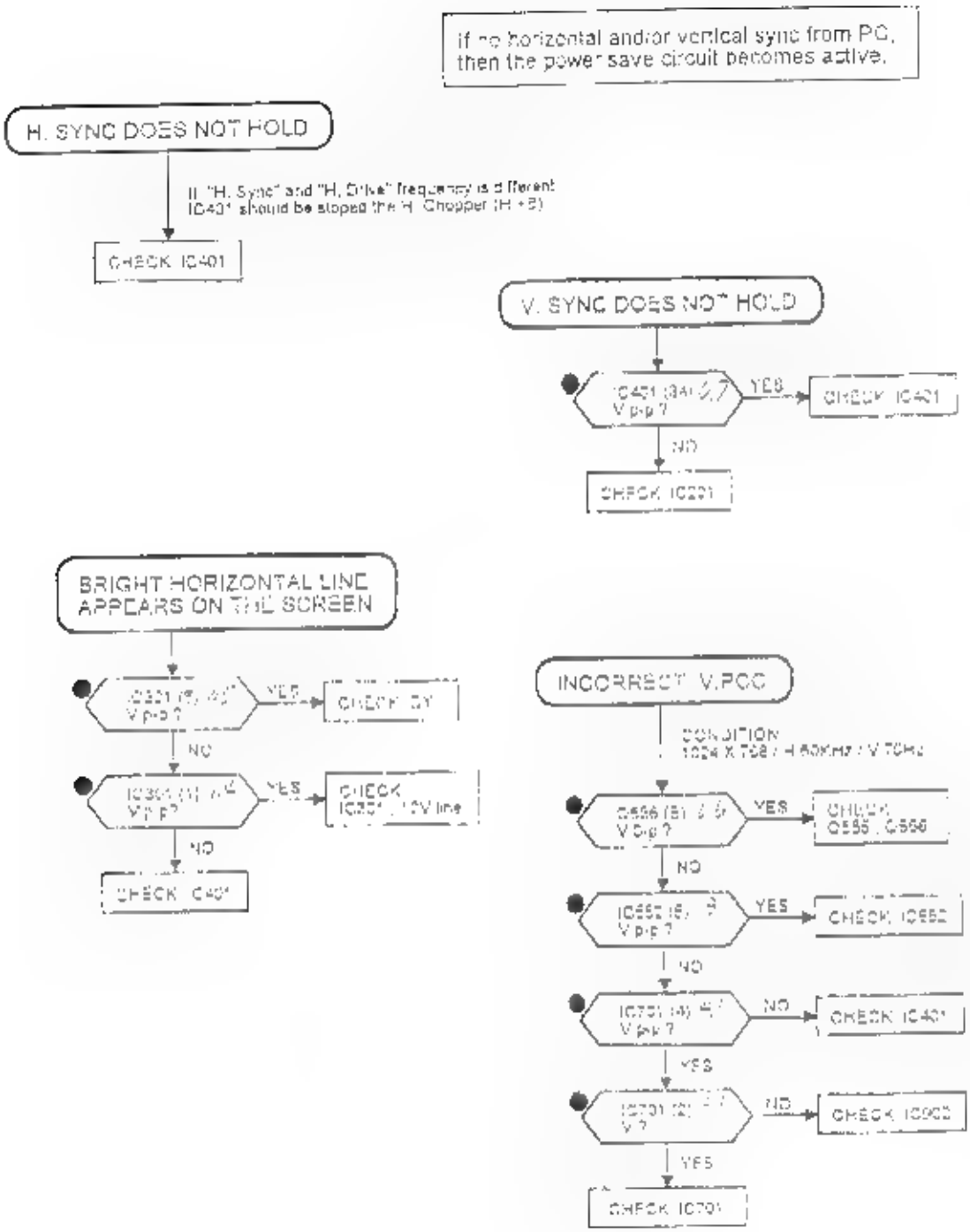

NO RASTER
CRT G1 -75.6 V 0-p ?
NO
If No Pulse
CHECK Q202 , Q203 C203
YES
CRT G2 250 V ?
NO
CHECK R285 , FBT
YES
CRT KR,KG,KB 25 V 0-p ?
NO
NO CHARACTERS
YES
CRT EHT 25 KV ?
YES
CHECK CRT
NO
DEFECTIVE HORIZONTAL DEFLECT ON CIRCUIT
Q205 (B) -8.6 V ?
YES
NO
IC1305 (13) V ?
YES
CHECK IC1306
NO
CHECK IC1306
Q208 (C) -75 V ?
YES
CHECK Q208
NO
CHECK Q207 , Q208 , Q1-B line


O.S.D. DOES NOT WORK
CONDITION TURN OFF THE R G B SIGNALS OSD ON
EXAMPLE MISSING GREEN
IC1303 (8) 3.8 V p-p ?
YES
NO CHARACTERS
NO
IC1303 (5) 3 V p-p ?
NO
CHECK Q205 , H BLK line
YES
IC1303 (10) V p-p ?
NO
CHECK Q207 , V BLK line
YES
IC1303 (9)(7)(6) V p-p ?
NO
CHECK IC1301
YES
IC1303 (4) V ?
NO
CHECK IC1304 , IC1305
YES
CHECK IC1303


DEFECTIVE HORIZONTAL DEFLECTION CIRCUIT
CONDITION
1024 X 768 / H 60KHz / V 75Hz
CRT EHT 25 KV ?
YES
NO RASTER
NO
Q551 (C) 2.0 V p-p ?
YES
CHECK FBT
NO
FBT (6) 12.6 V ?
NO
YES
Q551 (B) 1.2K V p-p ?
YES
CHECK Q551
NO
Q552 (D) 7.5 V p-p ?
YES
CHECK Y541
NO
Q552 (G) 2.2 V ?
YES
CHECK Q552
NO
IC401 (21) 0 V p-p ?
YES
CHECK Q555 , R455
NO
IC401 (2) 5.2 V ?
NO
CHECK Q403 SUSPEND line
YES
IC401 (17) 5 V p-p ?
YES
CHECK IC401 12V line
NO
Q401 (B) 0 V ?
NO
CHECK IC301
YES
CHECK IC701 , Q401
Q885 (D) 12.0 V p-p ?
YES
CHECK Q886
NO
Q851 (C) 50V ?
NO
CHECK D851 , R220
YES
Q885 (G) 2.8 V p-p ?
YES
CHECK Q885
NO
Q883 (B) 7.5 V p-p ?
YES
CHECK Q883 , Q884
NO
IC401 (17) 5 V p-p ?
NO
CHECK IC301
YES
IC401 (39) 5.2 V ?
NO
CHECK IC002
YES
CHECK IC401 12V line


NO POWER
T901 (*) VOLTAGE
AT AC100V V
AT AC120V V
AT AC220V V
AT AC240V V
D851 (C) V ?
YES
NO
T901 (1) CORRECT ?
NO
YES
D808 AC-IN CORRECT ?
YES
CHECK D808
NO
CHECK AC FUSE AC INPUT
D851 (C) V p-p?
YES
CHECK T901
NO
IC901 (8)(2) V p-p?
YES
CHECK IC901
NO
CHECK D804 D805 R810 R811
YES
REPLACE IC901
NG
CHECK SECONDARY POWER CIRCUIT
ABNORMAL POWER INDICATOR
D851 (LCD)
5V
CD02
IC901
HS VS CD02(D) COLOR
ON ON HIGH GREEN
OFF ON LOW YELLOW
ON OFF LOW YELLOW
OFF OFF LOW YELLOW
SIGNAL SEPARATE SYNC
ABNORMAL POWER SAVER
IC901 (8)(V) ?
YES
CHECK POWER SAVE ?
NO
IC901 (4)(V) p-p ?
YES
CHECK IC201
NO
IC201 (1) V p-p ?
YES
CHECK IC201
NO
CHECK INPUT SIGNAL


INCORRECT H. POSITION CONTROL
CONDITION
1024 X 768 / H 60KHz / V 75Hz
RASTER POSITION CENTER ?
YES
NO
Q559 , Q560 (B) TURN VR551 V = V ?
YES
CHECK Q559 , Q560
NO
CHECK VR551 , F_B Line
IC401 (15) V ?
YES
CHECK IC401
IC402 (5) V ?
YES
CHECK IC402
NO
CHECK IC902
INCORRECT V. SIZE CONTROL
CONDITION
1024 X 768 / H 60KHz / V 75Hz
IC401 (1) V ?
YES
CHECK IC401
NO
IC401 (31) V ?
YES
CHECK IC401
NO
IC402 (3) V ?
YES
CHECK IC402
NO
CHECK IC902
INCORRECT H. SIZE CONTROL
CONDITION
1024 X 768 / H 60KHz / V 75Hz
Q555 (B) V = ?
YES
CHECK Q555 , Q556
NO
Q552 (3) V ?
YES
CHECK IC552
NO
CHECK IC902
INCORRECT V. POSITION CONTROL
CONDITION
1024 X 768 / H 60KHz / V 75Hz
IC401 (33) V ?
YES
CHECK IC401
NO
IC402 (1) V ?
YES
CHECK IC402
NO
CHECK IC902


If no horizontal and/or vertical sync from PC, then the power save circuit becomes active.
H. SYNC DOES NOT HOLD
If "H. Sync" and "H. Drive" frequency is different IC401 should be stoped the H. Chopper (H +B)
CHECK IC401
V. SYNC DOES NOT HOLD
YES
CHECK IC401
NO
CHECK IC201
BRIGHT HORIZONTAL LINE APPEARS ON THE SCREEN
YES
NO
YES
NO
CHECK C401
INCORRECT V.POS
CONDITION
YES
CHECK
NO
YES
CHECK IC552
NO
YES
CHECK IC401
NO
YES
CHECK IC701

REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by the international symbol △ have special characteristics that are important for safety. When replacing any of these components use only manufacturer's specified parts.

RESISTOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Carbon	F	± 1 %
F	Fuse	J	± 5 %
M	Metal Oxide	K	± 10 %
S	Solid	M	± 20 %
G	Wire Wound	G	± 2 %
V	Variable Res.		
T	Thick Film Chip Resistor		

Part No. Description
Example: ERDS1TJ104TD (C) 100 kΩ (P) 1/4W

CAPACITOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Ceramic	C	± 0.25 pF
E	Electrolytic	D	± 0.5 pF
P	Polyester	F	± 1 pF
S	Styrol	J	± 5 %
T	Tantalum	K	± 10 %
PP	Polypropylene	L	± 15 %
	CHIP	M	± 20 %
		P	+100 % -0 %
		Z	+80 % -20 %

Part No. Description
Example: ECQM1H103JZ5M (C) 0.01 uF (V) 50V

REF. NO.	PART NO.	DESCRIPTION
		CABINET & MAIN PARTS
	EAGU03A	SPEAKER (2W)
△	M90KPC00CX01	C.R.T. (15")
	STQF1562A	LABEL
	T2H320	H.S. FOIL
△	TBM4C0458	MODEL NO. PLATE(1589GA-1A)
△	TBM4C0447C	MODEL NO. PLATE(1589GA-1M)
△	TBM4C0457S	MODEL NO. PLATE(1589GA-1E)
	TBX67523001T	CONTROL BUTTON
	TBX67524C1T	AUDIO BUTTON
△	TBX67525C1T	AC SWITCH BUTTON
	TFS4C0008	SW. SPRING
△	TKE6720A01T	FRONT CABINET
△	TKK4C0014-1	CENTER POST
	TKK659316-1T	POWER LED BAR
	TKK659316-2T	MUTE LED BAR
	TKK659740-3T	PANEL COVER
	TKK659978-1T	AC SWITCH SHAFT
	TKK659979-1T	PEDESTAL
△	TKL694C1T	BACK COVER
	TKX671801T	PCB SPACER
	TKX671801T	JACK HOLDER
△	TKY659501T	BOTTOM CABINET
△	TLK659005T	DEGAUSS COIL
	TMK84548	REVALLOY(L)
	TMK84928-1T	SET LEG
	TMK87711T	MICROPHONE SPONGE
	TMKE002T	BUTTON SPACER
	TMKG301T	GLM
	TMM15404-1	SPACER RING
	TMM16452	CLAMPER
	TMM4C0025	WIRE CLIP
	TMM4C0037	FOAM
	TMM4C0041	CLIP
	TMM4C0082	LEAD CLAMPER
	TMM7466	WIRE CLAMPER
	TMM81416	WIRE CLAMPER
	TMM82502-1	CRT GLM
	TMM85537T	MICROPHONE GUM
	TNP4C023048-22	MAIN PCB (W/ COMPONMENTS
	TNP4C03049-21	AUDIO/CRT PCB (")
	TNP4C03056-21	SUB PCB (W/ COMPONMENTS)
	TNQ83970	MICROPHONE
	TPC4C0390-2	PACKING CASE
	TPE4C0080-2	SET COVER
△	TQD8320267	CRT
	TQD4C0020	PM. SOFTWARE SHEET BAG
	TQD4C0021	PM. SOFTWARE SHEET
	TQF4C0385	WARNING LABEL
	TQF4C0405	S/N (1589GA-1M)
	TQF4C0427	BAR CODE LABEL(1589GA-1A)
	TQF4C0425	BAR CODE LABEL(1589GA-1E)
	TQF80720-2	PWC LABEL
	TQF80870T	PTB LABEL
	TQF80974T	US PATENT LABEL
	TQF86608T	EARTH NOTICE LABEL
	TSAA3000T	RADIATOR
	TSM4C0201-2	DISK
	TSN3211S-1	MAGNET
△	TSX4C0108-2	AC CORD (1589GA-1A/1F)
△	TSX3416	AC CORD (1589GA-1M)
△	TSXF002	SIGNAL CABLE
	TSXF005	SP. CABLE
	TSXF006	MIC. CABLE
	TSXX001T	1P CONNECTOR WIRE
	TSXX002T	2P CONNECTOR WIRE
	TSXX003T	3P CONNECTOR WIRE
△	TTE6720A01-1T	FRONT CABINET
	TUC85435T	TOP SHIELD CASE
	TUC86996T	CRT EARTH METAL
	TUC86997T	CRT EARTH METAL
	TUC86998T	CRT EARTH METAL
	TUC86999T	CRT EARTH METAL
	TUC87591T	CRT PCB SHIELD CASE
	TUC87624T	REAR SHIELD CASE
	TUX86192T	BOTTOM PLATE

REF. NO.	PART NO.	DESCRIPTION
	TUX86195T	ENFORCE METAL
	TXA3A2562VFMT	CRT KNT WIRE
	TXAJTC2P751AT	2P CONNECTOR
	TXAJTC3P1664T	3P CONNECTOR
	TXAJTC4P529T	4P CONNECTOR
	TXAJTC6P581T	6P CONNECTOR
	TXAPD1T1562	CUSHION
	TXT1027	SCREW
	TXT1069	SCREW
	TXT9913	SCREW
	XTB5+16A	SCREW
	XTN5+10A	SCREW
	XTV3+10C	SCREW
	XYA4+8F8	SCREW
	CAPACITORS	
C11	ECUV1C225ZFW	C 2.2 uF Z 16V
C13	ECUV1H102KBN	C 1000 pF K 50V
C14	ECUV1H104ZFX	C 0.1 uF Z 50V
C16	ECUV1H561KBN	C 560 pF K 50V
C17	TAC106Z104H	C 0.1 uF Z 100V
C202	ECQM1H224JZ3M	P 0.22 uF J 50V
C203	ECQV1H334JM3	P 0.33 uF J 50V
C204	ECEA1HTK4R7BJ	E 4.7 uF 50V
C205	ECQM1H104JZ3M	P 0.1 uF J 50V
C206	ECQM1H224JZ3M	P 0.22 uF J 50V
C207	ECEA1HTK4R7BJ	E 0.47 uF 50V
C208	ECCR1H471JG1P	C 470 pF J 50V
C209	ECQM1H332JZ3M	P 3300 pF J 50V
C210	ECCR1H101JG1P	C 100 pF J 50V
C211	ECQE2104KF3M	■ 0.1 uF K 250V
C212	ECEA1ETK101BJ	E 100 uF 25V
C213	ECKR1H103KB1P	C 0.01 uF K 50V
C214	ECEA1VTK470BJ	E 47 uF 35V
C215	ECCR1H820JG1P	C 82 pF J 50V
C216	ECEA1VTK100BJ	E 10 uF 35V
C217	ECEA1VTK101BJ	E 100 uF 35V
C218	ECQM1H332JZ3M	P 3300 pF J 50V
C220	ECCR1H101JG1P	C 100 pF J 50V
C301	ECQV1H225JL3	P 2.2 uF J 50V
C302	ECQM1H154JZ3M	P 0.15 uF J 50V
C303	ECUV1H103KBC	C 0.01 uF K 50V
C304	ECEA1CGE101B	E 100 uF 16V
C305	ECQM1H104JZ3M	P 0.1 uF J 50V
C306	ECCR1H681JG1P	C 680 pF J 50V
C307	ECEA1EGE471B	E 470 uF 25V
C308	ECQV1224JM3	P 0.22 uF J 100V
C309	ECEA1VTK101BJ	E 100 uF 35V
C310	ECCR1H332JG1P	C 33 pF J 50V
C311	ECEA1EGE471B	E 470 uF 25V
C313	ECKR1H102KB1P	C 1000 pF K 50V
C314	ECQV1H224JM3	P 0.22 uF J 100V
C315	ECQM1H223JZ3M	P 0.022 uF J 100V
C351	ECEA1ETK100BJ	E 10 uF 25V

REF. NO.	PART NO.	DESCRIPTION
C400	ECEA1ETK100BJ	E 10 uF 25V
C401	ECQM1H104JZ3M	P 0.1 uF J 50V
C402	ECQM1H223JZ3M	P 0.022 uF J 100V
C403	ECEA1CTK101BJ	E 100 uF 16V
C404	ECQP1H681GZ3M	P 680 pF G 50V
C405	ECQM1H103JZ3M	P 0.01 uF J 50V
C406	ECQM1H224JZ3M	P 0.22 uF J 50V
C407	ECUV1H104ZFX	C 0.1 uF Z 50V
C408	ECKR1H102KB1P	C 1000 pF K 50V
C409	ECQM1H473JZ3M	P 0.047 uF J 50V
C410	ECEA1CTK470BJ	E 47 uF 16V
C411	ECKR1H103KB1P	C 0.01 uF K 50V
C412	ECKR1H103KB1P	C 0.01 uF K 50V
C413	ECEA1ETK100BJ	E 10 uF 25V
C414	ECQM1H103JZ3M	P 0.01 uF J 50V
C416	ECCR1H101JG1P	C 100 pF J 50V
C417	ECKR1H103KB1P	C 0.01 uF K 50V
C418	ECEA1HTK010BJ	E 1 uF K 50V
C420	ECKR1H222KB1P	C 2200 pF K 50V
C551	ECKR2H681KB1P	C 680 pF K 500V
C552	ECWH12H152JZBM	P 1500 pF J 50V
C553	ECWH12H152JZBM	P 1500 pF J 50V
C554	ECQF6682JZBM3	P 6800 pF J 600V
C555	ECKR3A331KB1P	C 330 pF K 1000V
C556	ECKR3A331KB1P	C 330 pF K 1000V
C557	ECQF2224KZ3M	P 0.22 uF K 200V
C558	ECKR1H102KB1P	C 1000 pF K 50V
C559	ECEA1CTK470BJ	E 47 uF 16V
C560	ECWF4244JZBM	P 0.24 uF J 400V
C561	ECWF4154JZBM	P 0.15 uF J 400V
C562	ECWF4334JZBM	P 0.33 uF J 400V
C563	ECWF4624JZBM	P 0.62 uF J 400V
C564	ECQM1H473JZ3M	P 0.047 uF J 50V
C565	ECQM1H473JZ3M	P 0.047 uF J 50V
C566	ECQE1475JZBM	P 4.7 uF J 100V
C570	ECQM1H104JZ3M	P 0.1 uF J 50V
C571	ECQM1H104JZ3M	P 0.1 uF J 50V
C572	ECEA1HTK010BJ	E 1 uF 50V
C580	ECEA1VTK471BJ	E 470 uF 35V
C581	ECFA1EGN101B	E 100 uF 25V
C582	ECEA1ETK101BJ	E 100 uF 25V
C583	ECEA1ETK100BJ	E 10 uF 25V
C584	ECQV1H104JM3	P 0.1 uF J 50V
C585	ECQP6222JZBM3	P 2200 pF J 600V
C591	ECWH12H152JS	P 1500 pF 1200V
C592	ECQV1H104JZ3M	P 0.1 uF J 50V
C601	ECEA1HTK010BJ	E 1 uF 50V
C602	ECFA2CGR100B	E 10 uF *160V
C603	ECEA2ATK220BJ	E 22 uF 100V
C604	ECFA1HTK4R7BJ	E 4.7 uF 50V
C701	ECEA1ETK100BJ	E 10 uF 25V
C703	ECEA1ETK100BJ	E 10 uF 25V
C705	ECEA1EGN100B	E 10 uF 25V
C707	ECKR1H103KB1P	C 0.01 uF K 50V
△C801	ECQU3A334MNFT	P 0.33 uF 250V
△C802	ECQU3A334MNFT	P 0.33 uF 250V
△C803	TCKMN5222MFJ	C 2200 pF M 400V

REF. NO.	PART NO	DESCRIPTION					REF. NO.	PART NO.	DESCRIPTION				
⚠ C804	TCKMNS222MFJ	C	2200	pF	M	400V	C1025	ECCR1H221JG1P	C	220	pF	J	50V
C805	ECCR1H681JG1P	C	680	pF	J	50V	C1030	ECEA1CGE101B	E	100	uF		16V
C806	ECQE4333KF3	P	0.033	uF	K	400V	C1038	ECEA1HTK010BJ	E	1	uF		50V
C810	ECOS2GA331DB	E	330	uF		400V	C1039	ECCV1H104JZ3M	P	0.1	uF	J	50V
C811	ECEA0JGE470B	E	47	uF		6.3V	C1010	ECKR1H103KB1P	C	0.01	uF	K	50V
C812	ECEA1ETK101BJ	E	100	uF		25V	C1011	ECKC2H103KB1P	C	0.01	uF	K	500V
C813	ECCR1H101JG1P	C	100	pF	J	50V	C1101	ECEA1ETK100BJ	E	10	uF		25V
C818	ECQE6473JZ3M	P	0.047	uF	J	630V	C1102	ECQM1H104JZ3M	P	0.1	uF	J	50V
C819	ECKC3A331KB1P	C	330	pF	K	1000V	C1105	ECCR1H151JG1P	C	150	pF	J	50V
C820	ECQM1H104JZ3M	P	0.1	uF	J	50V	C1106	ECEA1CGE101B	E	100	uF		16V
C821	ECUV1H104ZFX	C	0.1	uF	Z	50V	C1108	ECEA1HTK010BJ	E	1	uF		50V
C823	ECCR1H221JG1P	C	220	pF	J	50V	C1109	ECQM1H104JZ3M	P	0.1	uF	J	50V
C824	ECQM1H102JZ3M	P	1000	pF	J	50V	C1110	ECKR1H103KB1P	C	0.01	uF	K	50V
C825	ECEA1ETK100BJ	E	10	uF		25V	C1111	ECKC2H103KB1P	C	0.01	uF	K	500V
C826	ECQM1H103JZ3M	P	0.01	uF	J	50V	C1201	ECEA1ETK100BJ	E	10	uF		25V
⚠ C831	TCKMNS222MFJ	C	2200	pF	M	400V	C1202	ECQM1H104JZ3M	P	0.1	uF	J	50V
⚠ C832	TCKMNS222MFJ	C	2200	pF	M	400V	C1203	ECCR1H101JG1P	C	100	pF	J	50V
C835	ECKR3A101KB1P	C	100	pF	K	1000V	C1208	ECEA1CGE101B	E	100	uF		16V
C842	ECKC3A332KB1P	C	3300	pF	K	1000V	C1205	ECEA1HTK010BJ	E	1	uF		50V
C843	ECKC3A101KB1P	C	100	pF	K	1000V	C1209	ECQM1H104JZ3M	P	0.1	uF	J	50V
C844	ECKR3A331KB1P	C	330	pF	K	1000V	C1210	ECKR1H103KB1P	C	0.01	uF	K	50V
C845	ECKR3A221KB1P	C	220	pF	K	1000V	C1211	ECKC2H103KB1P	C	0.01	uF	K	500V
C850	ECEA2CGE100B	E	10	uF		160V	C1212	ECCR1H101JG1P	C	100	pF	J	50V
C861	ECEA2AGE471E	E	470	uF		100V	C1301	ECQM1H104JZ3M	P	0.1	uF	J	50V
C862	ECEA2CGE101B	E	100	uF		16V	C1302	ECKR1H102KB1P	C	1000	pF	K	50V
C863	ECEA1VGE222E	E	2200	uF		35V	C1304	ECCR1H101JG1P	C	100	pF	J	50V
C864	ECEA1FGF102B	E	1000	uF		35V	C1305	ECCR1H220JG1P	C	22	pF	J	50V
C865	ECEA1CGE222B	E	2200	uF		16V	C1306	CEA1ATK221BJ	E	220	uF		10V
C866	ECEA1ETK331BJ	E	330	uF		25V	C1305	ECEA1ATK221BJ	E	220	uF		10V
C867	ECQM1H104JZ3M	P	0.1	uF	J	50V	C1307	ECQM1H103JZ3M	P	0.01	uF	J	50V
C868	ECEA1EGE102B	E	1000	uF		25V	C1308	ECQM1H333JZ3M	P	0.033	uF	J	50V
C869	ECEA1ETK100BJ	E	10	uF		25V	C1309	ECQM1H103JZ3M	P	0.01	uF	J	50V
C870	ECEA1ETK100BJ	E	10	uF		25V	C1310	ECQM1H103JZ3M	P	0.01	uF	J	50V
C871	ECQV1C105ZFW	C	1	uF	A	16V	C1311	ECKC3D272KB1P	C	2700	pF	K	2000V
C872	ECEA1CGE331B	E	330	uF		16V	C1312	ECEA1CTK102EJ	E	1000	uF		15V
C895	ECEA2DGF101E	E	100	uF		200V	C1313	ECEA1CGE101B	E	100	uF		16V
C896	ECKR2H221KB1P	C	220	pF	K	500V	C1314	ECEA2CGE101E	E	100	uF		16V
C897	ECQE2223JZ3M	P	0.022	uF	J	200V	C1315	ECEA1ETK100BJ	E	10	uF		25V
C898	ECKC3A332KB1P	C	3300	pF	K	1000V	C1316	ECEA1ETK100BJ	E	10	uF		25V
C901	ECEA1VTK222EJ	E	2200	uF		35V	C1317	ECEA1ETK100BJ	E	10	uF		25V
C901	ECEA1VGE222E	E	2200	uF		35V	C1319	ECEA1ETK100BJ	E	10	uF		25V
C902	ECEA1ETK100BJ	E	10	uF		25V	C1320	ECQM1H103JZ3M	P	0.01	uF	J	50V
C901	ECCR1H220JG1P	C	22	pF	J	50V	C1321	ECEA1ETK100BJ	E	10	uF		25V
C903	ECQM1H104JZ3M	P	0.1	uF	J	50V	C1322	ECEA1CTK470BJ	E	47	uF		16V
C904	ECCR1H221JG1P	C	220	pF	J	50V	C1323	ECKR1H103KB1P	C	0.01	uF	K	50V
C905	ECCR1H221JG1P	C	220	pF	J	50V	C1324	ECKR2H331KB1P	C	330	pF	K	500V
C906	ECCR1H221JG1P	C	220	pF	J	50V	C1325	ECEA1ETK101BJ	E	100	uF		25V
C907	ECEA0JTK101BJ	E	100	uF		6.3V	C1327	ECKR3A152KB1P	C	1500	pF	K	1000V
C908	ECCR1H101JG1P	C	100	pF	J	50V	C1328	ECEA1ETK100BJ	E	10	uF		25V
C909	ECEA1HTK010BJ	E	1	uF		50V	C1329	ECKR1H103KB1P	C	0.01	uF	K	50V
C910	ECCR1H220JG1P	C	22	pF	J	50V	C1331	ECKR1H103KB1P	C	0.01	uF	K	50V
C913	ECCR1H220JG1P	C	22	pF	J	50V	C1351	ECCR1H101JG1P	C	100	pF	J	50V
C914	ECCR1H220JG1P	C	22	pF	J	50V	C1352	ECCR1H101JG1P	C	100	pF	J	50V
C915	ECCR1H220JG1P	C	22	pF	J	50V	C1353	ECCR1H101JG1P	C	100	pF	J	50V
C916	ECCR1H220JG1P	C	22	pF	J	50V	C1355	ECEA1ETK331EJ	E	330	uF		25V
C1001	ECEA1ETK100BJ	E	10	uF		25V	C1501	ECQB1H103JF3	P	0.01	uF	J	50V
C1002	ECQM1H104JZ3M	P	0.1	uF	J	50V	C2351	ECQB1H123JF3	P	0.012	uF	J	50V

REF. NO.	PART NO.	DESCRIPTION			
C2302	ECQB1H123JF3	P	0.012 uF	J	50V
C2303	ECEA1EGE220B	E	22 uF		25V
C2304	ECEA1HKG010B	E	1 uF		50V
C2305	ECEA1CTK221BJ	E	220 uF		16V
C2306	ECEA1HKG010B	E	1 uF		50V
C2307	ECEA1EGE220B	E	22 uF		25V
C2308	ECEA1CTK471BJ	E	470 uF		16V
C2309	ECQB1H104JF3	P	0.1 uF	J	50V
C2310	ECQB1H104JF3	P	0.1 uF	J	50V
C2311	ECEA1CTK471BJ	E	470 uF		16V
C2312	ECEA1EGE102B	E	1000 uF		25V
C2313	ECEA1ETK102EJ	E	1000 uF		25V
C2401	ECEA1HKG2R2B	E	2.2 uF		50V
C2402	ECEA1HKG2R2B	E	2.2 uF		50V
C2403	ECQB1H223JF3	P	0.022 uF	J	50V
C2404	ECEA1HKGR22B	E	0.22 uF		50V
C2407	ECQB1H223JF3	P	0.022 uF	J	50V
C2408	ECEA1HKGR22B	E	0.22 uF		50V
C2409	ECEA1CKG100B	E	10 uF		16V
C2410	ECEA1CKG220B	E	22 uF		16V
C2411	ECEA1HKG010B	E	1 uF		50V
C2412	ECEA1CTK221BJ	E	220 uF		16V
C2413	ECEA1CTK470BJ	E	47 uF		16V
C2414	ECEA1HKG010B	E	1 uF		50V
C2415	ECQB1H103JF3	P	0.01 uF	J	50V
C2420	ECKR1H102KB1P	C	1000 pF	K	50V
C2421	ECKR1H102KB1P	C	1000 pF	K	50V
C2422	ECQB1H681JF3	P	680 pF	J	50V
C2423	ECQB1H681JF3	P	680 pF	J	50V

DIODES

D11	MA153ATX	DIODE (CHIP)
D12	MA3150MTX	DIODE (CHIP)
D13	MA174TX	CHIP DIODE
D201	MTZJ5R1BT77	ZENER DIODE
D202	MTZJ5R1BT77	ZENER DIODE
D203	1N4148TB52	DIODE
D203	1N4148TB26	DIODE
D204	1N4148TB52	DIODE
D204	1N4148TB26	DIODE
D207	HZT33-09TD	DIODE
D208	HZT33-09TD	DIODE
D209	MTZJ12BT77	ZENER DIODE
D210	MTZJ20CT77	ZENER DIODE
D232	MTZJ5R1BT77	ZENER DIODE
D301	1N4001TB26	DIODE
D303	1N4148TB52	DIODE
D303	1N4148TB26	DIODE
D401	MTZJ5BT77	ZENER DIODE
D404	1N4148TB52	DIODE
D404	1N4148TB26	DIODE
D405	MA700TA	DIODE
D406	MA28W-ATX	CHIP DIODE
D551	FMP-G2FS	DIODE
D552	31DF6HC(A)	DIODE
D554	1DD04TA2	DIODE
D555	RG2ALFC1-H	DIODE
D556	MTZJ15BT77	ZENER DIODE
D557	1N5818E-2	DIODE
D558	10DF6-TA2	DIODE
D560	10DF6-TA2	DIODE
D561	MTZJ6R8BT77	ZENER DIODE
D562	1N4148TB52	DIODE
D562	1N4148TB26	DIODE
D563	RP3F014-302	DIODE
D565	1N4148TB52	DIODE
D565	1N4148TB26	DIODE
D590	EU02AV0	DIODE
D590	EU02AV0-H	DIODE
D591	1N4148TB52	DIODE
D591	1N4148TB26	DIODE
D592	EU02AV0-H	DIODE
D601	1SS133T77	DIODE
D602	EU02ZV0-H	DIODE
D603	1N4148TB52	DIODE
D603	1N4148TB26	DIODE
D604	MA700TA	DIODE
D605	MTZJ15BT77	ZENER DIODE
D801	RBV406MLFA	DIODE
D805	RG2A2LF	DIODE
D805	ERA32-02V2	DIODE
D811	MTZJ27BT77	ZENER DIODE
D812	MTZJ5R1BT77	ZENER DIODE
D814	MTZJ10BT77	ZENER DIODE
D830	MTZJ24BT77	ZENER DIODE
D851	FML-G19SLF	DIODE
D852	RG2A2LF	DIODE
D853	ERC50M-03	DIODE
D854	RN37014-305	DIODE
D855	31DF2-FC	DIODE
D856	RN3Z014-305	DIODE
D870	RN3Z014-305	DIODE
D871	MTZJ6R2BT77	ZENER DIODE
D872	MTZJ6R2BT77	ZENER DIODE
D886	31DF2-FC	DIODE
D901	L-53EGW	LED
D902	1SS133T77	DIODE
D903	1SS133T77	DIODE
D904	1SS133T77	DIODE
D905	MTZJ5R6BT77	ZENER DIODE
D906	1N4148TB26	DIODE
D912	MTZJ5R6BT77	ZENER DIODE
D916	1SS133T77	DIODE
D917	1N4148TB26	DIODE
D918	1SS133T77	DIODE
D919	1SS133T77	DIODE
D920	1SS133T77	DIODE
D930	L-53AD-12.5	LED
D1001	1SS133T77	DIODE

REF. NO.	PART NO.	DESCRIPTION
D1002	1SS133T77	DIODE
D1005	1SS133T77	DIODE
D1006	MA167ATA5	DIODE
D1007	MA167ATA5	DIODE
D1101	1SS133T77	DIODE
D1102	1SS133T77	DIODE
D1105	1SS133T77	DIODE
D1106	MA167ATA5	DIODE
D1107	MA167ATA5	DIODE
D1201	1SS133T77	DIODE
D1202	1SS133T77	DIODE
D1205	1SS133T77	DIODE
D1206	MA167ATA5	DIODE
D1207	MA167ATA5	DIODE
D1301	MTZJ5R6BT77	ZENER DIODE
D1302	MTZJ5R6BT77	ZENER DIODE
D1306	MTZJ10RT77	ZENER DIODE
D1307	MA700TA	DIODE
D1350	1N4148TB2B	DIODE
D1360	1N4148TB82	DIODE
D1361	1SS133T77	DIODE
D1362	MA27WATA	DIODE
D1501	MTZJ5R6BT77	ZENER DIODE
D1502	MTZJ5R6BT77	ZENER DIODE
D1503	MTZJ5R6BT77	ZENER DIODE
D1504	MA700TA	DIODE
D2401	MA709ATA	DIODE
D2402	MTZJ9R1BT77	ZENER DIODE
D2407	1SS133T77	DIODE
D2408	1SS133T77	DIODE
D2410	1SS133T77	DIODE
D2411	1SS133T77	DIODE
D2412	MTZJ6R2BT77	ZENER DIODE
	I.C	
IC201	CXA1615S	IC (22 PIN)
IC301	TDA8172	IC (7 PIN)
IC401	TDA9103	IC (42 PIN)
IC402	LM324MX	CHIP IC (14 PIN)
IC403	LM358MX	CHIP IC (8 PIN)
IC552	LV324VX	CHIP IC (14 PIN)
IC701	UPC1406HA	IC (5 PIN)
IC702	LM358MX	CHIP IC (8 PIN)
IC851	UC3842N	IC (8 PIN)
IC862	L78LR05C-TL	CHIP IC (5 PIN)
IC863	SE095N	IC (3 PIN)
IC864	SI-3240C	IC (5 PIN)
IC901	TVC50221-E	CHIP IC (64 PIN)
IC902	MB88346BPFTF	CHIP IC (20 PIN)
IC904	NM24C08N	IC (8 PIN)
IC1305	MB88346BPFTF	CHIP IC (20 PIN)
IC1306	LM324MX	CHIP IC (14 PIN)
IC1307	MM74HC4066N	IC (14 PIN)
IC1201	LM1237N	IC (28 PIN)
IC1303	LSC4352	IC (16 PIN)

REF. NO.	PART NO	DESCRIPTION
IC1304	LV2931AZ-5T3	IC (3 PIN)
IC1501	24LC21P	IC (8 PIN)
IC2401	LA4270	IC (10 PIN)
IC2402	CXA1279AS	IC (22 PIN)
	COILS	
L201	TLT331K186T	COIL
L552	TLX4C6056K01	COIL
⚠ L553	TLH4C65508D	LINEARITY COIL
⚠ L554	TLH65607	CHOKE COIL
⚠ L555	TLH4C65927D	BRIDGE COIL
L556	TLT681K186T	COIL
L601	SPTC406A102K	COIL
⚠ L801	TLF4C65530D	LINE FILTER
L805	EXCELDR35V	COIL
⚠ L806	TLF4C65530D	LINE FILTER
L852	EXCELDR35V	COIL
L853	EXCELDR35V	COIL
L854	EXCELDR35V	COIL
L855	EXCELDR35V	COIL
L856	EXCELDR35V	COIL
L970	EXCELDR35V	COIL
L1001	TLT3R9K186T	COIL
L1002	TLTR47M186T	COIL
L1101	TLT3R9K186T	COIL
L1102	TLTR47M186T	COIL
L1201	TLT3R9K186T	COIL
L1202	TLTR47M186T	COIL
L1302	TLT470K186T	COIL
L1304	TLT331K186T	COIL
L1305	TLT101K186T	COIL
L2301	EXCELDR35V	COIL
	TRANSISTORS	
Q11	2SK1701D	CHIP MOS
Q12	2SD602CRTX	TRANSISTOR
Q13	2SC4080DETD	CHIP TRANSISTOR
Q14	2SC4080DETD	CHIP TRANSISTOR
Q15	2SA1575DETD	CHIP TRANSISTOR
Q201	H945PTZ	TRANSISTOR
Q202	H945PTZ	TRANSISTOR
Q203	H945PTZ	TRANSISTOR
Q204	H945PTZ	TRANSISTOR
Q205	DTC114ESTQ	TRANSISTOR
Q207	DTC114ESTQ	TRANSISTOR
Q208	2SA1235QRTA	TRANSISTOR
Q209	H945PTZ	TRANSISTOR
Q301	DTC114ESTQ	TRANSISTOR
Q401	DTC114ESTQ	TRANSISTOR
Q403	DTC114ESTQ	TRANSISTOR
Q551	2SC5129	TRANSISTOR

REF. NO.	PART NO.	DESCRIPTION
Q552	2SK2015TX	CHIP TRANSISTOR
Q553	2SK1917F91	MOS F.E.T
Q554	2SK1917F9*	MOS F.E.T
Q555	2SD1266QRRL	TRANSISTOR
Q556	2SB1322AQRTA	TRANSISTOR
Q557	DTC114ESTQ	TRANSISTOR
Q558	DTC114ESTQ	TRANSISTOR
Q559	2SD2133RSTA	TRANSISTOR
Q560	2SB1413RSTA	TRANSISTOR
Q592	2SK1507-91M	F.E.T
Q601	2SK2148F106	F.E.T.
Q602	DTC114ESTQ	TRANSISTOR
Q603	2SA733QR-T	TRANSISTOR
Q604	2SC4080V25T2	TRANSISTOR
Q605	DTC114ESTQ	TRANSISTOR
Q607	2SA1577RT106	CHIP TRANSISTOR
Q608	2SC4061RT106	CHIP TRANSISTOR
Q609	2SA733QR-T	TRANSISTOR
Q610	2SA1577RT106	CHIP TRANSISTOR
Q611	2SC1318RTA	TRANSISTOR
Q650	2SB1414RSTA	TRANSISTOR
Q651	2SC1473RTA	TRANSISTOR
Q651	2SA733QR-T	TRANSISTOR
Q652	2SA733QR-T	TRANSISTOR
Q653	2SC1623CD	TRANSISTOR
Q654	DTC114ESTQ	TRANSISTOR
Q655	2SD942AC	TRANSISTOR
Q656	DTC114ESTQ	TRANSISTOR
Q657	2SB857WC	TRANSISTOR
Q657	2SB857WC	TRANSISTOR
Q658	1046PTZ	TRANSISTOR
Q670	DTC114ESTQ	TRANSISTOR
Q671	2SB1202RS-TL	CHIP TRANSISTOR
Q672	2SA733QR-T	TRANSISTOR
Q673	2SC1473QRTA	TRANSISTOR
Q681	DTC114ESTQ	TRANSISTOR
Q682	DTC114ESTQ	TRANSISTOR
Q683	2SD1982AQRTA	TRANSISTOR
Q684	2SB1321AQRTA	TRANSISTOR
Q685	2SK1917F91	MOS F.E.T
Q902	DTA114ESTQ	TRANSISTOR
Q903	DTC114ESTQ	TRANSISTOR
Q904	DTA114ESTQ	TRANSISTOR
Q1002	2SC4693	TRANSISTOR
Q1003	2SC4934E	TRANSISTOR
Q1102	2SC4693	TRANSISTOR
Q1103	2SC4934E	TRANSISTOR
Q1202	2SC4695	TRANSISTOR
Q1203	2SC4934E	TRANSISTOR
Q1301	2SC3811RTA	TRANSISTOR
Q1302	2SC3811RTA	TRANSISTOR
Q1303	DTC114ESTQ	TRANSISTOR
Q1304	2SA733QR-T	TRANSISTOR
Q1305	2SA733QR-T	TRANSISTOR

REF. NO.	PART NO.	DESCRIPTION
	RESISTORS	
J11	ERJ6GEY0R00VT	T C Ω 1/10W
J1001	ERJ6GEY0R00VT	T C Ω 1/10W
J1002	ERJ6GEY0R00VT	T C Ω 1/10W
J1003	ERJ6GEY0R00VT	T C Ω 1/10W
J1004	ERJ6GEY0R00VT	T C Ω 1/10W
J1005	ERJ6GEY0R00VT	T C Ω 1/10W
J1006	ERJ6GEY0R00VT	T C Ω 1/10W
J1007	ERJ6GEY0R00VT	T C Ω 1/10W
J1008	ERJ6GEY0R00VT	T C Ω 1/10W
J1009	ERJ6GEY0R00VT	T C Ω 1/10W
J1010	ERJ6GEY0R00VT	T C Ω 1/10W
J1011	ERJ6GEY0R00VT	T C Ω 1/10W
J1012	ERJ6GEY0R00VT	T C Ω 1/10W
J1013	ERJ6GEY0R00VT	T C Ω 1/10W
J1014	ERJ6GEY0R00VT	T C Ω 1/10W
J1015	ERJ6GEY0R00VT	T C Ω 1/10W
J1016	ERJ6GEY0R00VT	T C Ω 1/10W
J1017	ERJ6GEY0R00VT	T C Ω 1/10W
J1018	ERJ6GEY0R00VT	T C Ω 1/10W
J1019	ERJ6GEY0R00VT	T C Ω 1/10W
J1020	ERJ6GEY0R00VT	T C Ω 1/10W
J1021	ERJ6GEY0R00VT	T C Ω 1/10W
J1022	ERJ6GEY0R00VT	T C Ω 1/10W
J1023	ERJ6GEY0R00VT	T C Ω 1/10W
J1024	ERJ6GEY0R00VT	T C Ω 1/10W
J1025	ERJ6GEY0R00VT	T C Ω 1/10W
J1026	ERJ6GEY0R00VT	T C Ω 1/10W
J1027	ERJ6GEY0R00VT	T C Ω 1/10W
J1028	ERJ6GEY0R00VT	T C Ω 1/10W
J1029	ERJ6GEY0R00VT	T C Ω 1/10W
J1030	ERJ6GEY0R00VT	T C Ω 1/10W
J1031	ERJ6GEY0R00VT	T C Ω 1/10W
J1032	ERJ6GEY0R00VT	T C Ω 1/10W
J1033	ERJ6GEY0R00VT	T C Ω 1/10W
J1034	ERJ6GEY0R00VT	T C Ω 1/10W
J1035	ERJ6GEY0R00VT	T C Ω 1/10W
J1036	ERJ6GEY0R00VT	T C Ω 1/10W
J1037	ERJ6GEY0R00VT	T C Ω 1/10W
J1038	ERJ6GEY0R00VT	T C Ω 1/10W
J1039	ERJ6GEY0R00VT	T C Ω 1/10W
J1040	ERJ6GEY0R00VT	T C Ω 1/10W
J1041	ERJ6GEY0R00VT	T C Ω 1/10W
J1042	ERJ6GEY0R00VT	T C Ω 1/10W
J1043	ERJ6GEY0R00VT	T C Ω 1/10W
R11	ERJ6ENF1002VT	T 10KΩ F 1/10W
R12	ERJ6ENF4703VT	T 470KΩ F 1/10W
R13	ERJ6ENF1002VT	T 10KΩ F 1/10W
R14	ERJ6ENF3301VT	T 3.3KΩ F 1/10W
R15	TAR101D0183H	T 18KΩ 10%
R16	ERJ6ENF5600VT	T 560Ω F 1/10W
R18	TAR101D0273H	T 27KΩ 10%
R19	ERJ6ENF4702VT	T 47KΩ F 1/10W
R20	ERJ6ENF4702VT	T 47KΩ F 1/10W
R22	ERJ6GEY0R00VT	T 0Ω 1/10W
R23	ERJ6GEYJ103VT	T 10KΩ J 1/10W

REF NO.	PART NO.	DESCRIPTION
R24	ERJ6ENF4703VT	T 470KΩ F 1/10W
R25	ERJ6ENF1000VT	T 100Ω F 1/10W
R201	ERJ6GEYJ471VT	T 470Ω J 1/10W
R202	ERD25TJ102TT	C 1KΩ J 1/4W
R203	ERJ6GEYJ104VT	T 100KΩ J 1/10W
R205	ERD25TJ271TT	C 270Ω J 1/4W
R206	ERJ6GEYJ123VT	T 12KΩ J 1/10W
R207	ERJ6GEYJ392VT	T 3.9KΩ J 1/10W
R208	ERJ6GEYJ682VT	T 6.8KΩ J 1/10W
R209	ERJ6GEYJ392VT	T 3.9KΩ J 1/10W
R210	ERD25TJ222TT	C 2.2KΩ J 1/4W
R211	ERD25TJ122TT	C 1.2KΩ J 1/4W
R212	ERJ6GEYJ122VT	T 1.2KΩ J 1/10W
R213	ERJ6GEYJ223VT	T 22KΩ J 1/10W
R214	ERD25TJ223TT	C 22KΩ J 1/4W
R215	ERJ6GEYJ222VT	T 2.2KΩ J 1/10W
R216	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R217	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R218	ERD25TJ103TT	C 10KΩ J 1/4W
R219	ERD25TJ272TT	C 2.7KΩ J 1/4W
R220	ERD25TJ392TT	C 3.9KΩ J 1/4W
R221	ERJ6GEYJ223VT	T 22KΩ J 1/10W
R223	ERJ6ENF2152VT	T 21.5KΩ F 1/10W
R224	ERD5*VJ103TT	C 10KΩ J 1/2W
R225	ERD25TJ102TT	C 1KΩ J 1/4W
R226	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R227	ERD25TJ104TT	C 100KΩ J 1/4W
R228	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R229	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R230	ERJ6ENF6492VT	T 64.9KΩ F 1/10W
R231	ERD25TKF1502T	M 15KΩ F 1/4W
R232	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R234	ERJ6GEYJ681VT	T 680Ω J 1/10W
R235	ERJ6GEYJ332VT	T 3.3KΩ J 1/10W
R236	ERDS1TJ680T	C 68Ω J 1/2W
R237	ERD25TJ223TT	C 22KΩ J 1/4W
R238	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R301	ERD25TJ123TT	C 12KΩ J 1/4W
R302	ERJ6ENF4531VT	T 4.53KΩ F 1/10W
R303	ERJ6ENF2432VT	T 24.3KΩ F 1/10W
R305	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R307	ERD25TJ123TT	C 12KΩ J 1/4W
R308	ERD25TJ103TT	C 1KΩ J 1/4W
R309	ERDS1TJ333TT	C 33KΩ J 1/2W
R310	ERJ6GEYJ123VT	T 12KΩ J 1/10W
R311	ERJ6GEYJ682VT	T 6.8KΩ J 1/10W
R312	ERDS1TJ183TT	C 18KΩ J 1/2W
R313	ERDS2TJ1R0TT	C 1Ω J 1/4W
R314	ERG1SJW221E	M 220Ω J 1W
R315	ERX1SJW1R0E	M 1Ω J 1W
R316	ERJ6GEYJ471VT	T 470Ω J 1/10W
R317	ERD25TJ103TT	C 1KΩ J 1/4W
R318	ERD25TJ103TT	C 10KΩ J 1/4W
R319	ERJ6GEYJ392VT	T 3.9KΩ J 1/10W
R320	ERJ6GEYJ273VT	T 27KΩ J 1/10W
R350	ERJ6GEYJ103VT	T 10KΩ J 1/10W

REF NO.	PART NO.	DESCRIPTION
R351	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W
R352	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R353	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W
R354	ERD25TJ103TT	C 10KΩ J 1/4W
R355	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W
R356	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R357	ERD25TJ103TT	C 10KΩ J 1/4W
R358	ERD25TJ392TT	C 3.9KΩ J 1/4W
R359	ERD25TJ103TT	C 10KΩ J 1/4W
R360	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R361	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W
R362	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R363	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R401	ERJ6GEYJ823VT	T 82KΩ J 1/10W
R402	ERJ6GEYJ393VT	T 39KΩ J 1/10W
R403	ERD25TJ103TT	C 10KΩ J 1/4W
R404	ERJ6GEYJ100VT	T 10Ω J 1/10W
R405	ERJ6ENF7501VT	T 7.5KΩ F 1/10W
R406	ERD25TJ222TT	C 2.2KΩ J 1/4W
R410	ERJ6GEYJ393VT	T 39KΩ J 1/10W
R412	ERJ6ENF1242VT	T 12.4KΩ F 1/10W
R413	ERJ6ENF2322VT	T 23.2KΩ F 1/10W
R414	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R415	ERD25TJ502TT	C 5.0KΩ J 1/4W
R416	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R417	ERD25TJ273TT	C 27KΩ J 1/4W
R418	ERD25TJ821TT	C 820Ω J 1/4W
R419	ERJ6GEYJ393VT	T 39KΩ J 1/10W
R420	ERJ6GEYJ564VT	T 560KΩ J 1/10W
R421	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R422	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R423	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W
R424	ERJ6GEYJ224VT	T 220KΩ J 1/10W
R425	ERJ6GEYJ153VT	T 15KΩ J 1/10W
R426	ERJ6GEYJ223VT	T 22KΩ J 1/10W
R427	ERJ6GEYJ183VT	T 18KΩ J 1/10W
R540	ERX3SJ3R9ST	M 3.9Ω J 3W
R541	ERX3SJ3R9ST	M 3.9Ω J 3W
R550	ERG3FJX270E	M 27Ω J 3W
R551	ERDS1TJ470T	C 47Ω J 1.2W
R552	ERJ6GEYJ332VT	T 3.3KΩ J 1/10W
R553	ERG1SJW561E	M 560Ω J 1W
R554	ERX2SJW1R2E	M 1.2Ω J 2W
R555	ERX2SJW1R0E	M 1Ω J 2W
R556	ERX2SJ6R8ST	M 6.8Ω J 2W
R557	ERX3FJX6R8E	M 6.8Ω J 3W
R558	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W
R559	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R560	ERDS1TJ271TT	C 270Ω J 1/2W
R561	TARRS5B150J2	M 15Ω J 5W
R562	TARRS5B150J2	M 15Ω J 5W
R563	ERJ6GEYJ332VT	T 3.3KΩ J 1/10W
R564	ERDS1TJ471TT	C 470Ω J 1/2W
R565	ERDS1TJ471TT	C 470Ω J 1/2W
R566	ERJ6GEYJ103VT	T 10Ω J 1/10W
R567	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W

REF. NO.	PART NO.		DESCRIPTION			REF. NO.	PART NO.		DESCRIPTION		
R566	ERDS2TJ100TT	C	10 Ω	J	1/4W	R809	ERDS1TJ224TT	C	220KΩ	J	1/2W
R569	ERDS2TJ472TT	C	4.7KΩ	J	1/4W	R810	ERG2SJW333E	M	33KΩ	J	2W
R570	ERDS1TJ472TT	C	4.7KΩ	J	1/2W	R811	ERG2SJW333E	M	33KΩ	J	2W
R571	ERDS1TJ472TT	C	4.7KΩ	J	1/2W	R812	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W
R572	ERX2SJW2R7E	M	2.7 Ω	J	2W	R813	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W
R575	ERD25TJ272TT	C	2.7KΩ	J	1/4W	R815	ERG3FJX473E	M	47KΩ	J	3W
R576	ERJ6GEYJ682VT	T	6.8KΩ	J	1/10W	R816	ERQ14AJW220E	F	22 Ω	J	1/4W
R577	ERDS2TJ472TT	C	4.7KΩ	J	1/4W	R817	ERJ6GEYJ223VT	T	22KΩ	J	1/10W
R578	ERJ6GEYJ333VT	T	33KΩ	J	1/10W	R818	ERX3FJXR22E	M	0.22 Ω	J	3W
R580	ERJ6GEYJ222VT	T	2.2KΩ	J	1/10W	R819	ERDS2TJ222TT	C	2.2KΩ	J	1/4W
R581	ERD25TJ222TT	C	2.2KΩ	J	1/4W	R820	ERX3SJR22E	M	0.22 Ω	J	3W
R582	ERDS2TJ333TT	C	33KΩ	J	1/4W	R821	ERJ6GEYJ332VT	T	3.3KΩ	J	1/10W
R583	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R822	ERJ6GEYJ332VT	T	3.3KΩ	J	1/10W
R584	ERJ6GEYJ222VT	T	2.2KΩ	J	1/10W	R823	ERJ6ENF8202VT	T	8.2KΩ	F	1/10W
R585	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R824	ERDS2TJ470TT	C	47 Ω	J	1/4W
R586	ERJ6GEYJ332VT	T	3.3KΩ	J	1/10W	R825	ERX3FLXR22E	M	0.22 Ω	J	3W
R587	ERDS2TJ153TT	C	15KΩ	J	1/4W	R826	ERDS2TJ102TT	C	1KΩ	J	1/4W
R588	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W	R827	ERJ6GEYJ682VT	T	6.8KΩ	J	1/10W
R589	ERD25TJ822TT	C	8.2KΩ	J	1/4W	R828	ERDS1TJ271TT	C	270Ω	J	1/2W
R590	ERDS2TJ222TT	C	2.2KΩ	J	1/4W	R829	ERDS2TJ223TT	C	22KΩ	J	1/4W
R591	ERDS2TJ102TT	C	1.0KΩ	J	1/4W	R830	ERD25TJ220TT	C	22 Ω	J	1/4W
R592	ERD25TJ273TT	C	27KΩ	J	1/4W	R831	ERDS1TJ331TT	C	330Ω	J	1/2W
R593	ERJ6GEYJ223VT	T	22KΩ	J	1/10W	R832	ERDS2TJ221TT	C	220Ω	J	1/4W
R594	ERJ6GEYJ273VT	T	27KΩ	J	1/10W	R833	ERDS2TJ221TT	C	220Ω	J	1/4W
R595	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R834	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W
R596	ERJ6GEYJ682VT	T	6.8KΩ	J	1/10W	R835	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W
R597	ERJ6GEYJ222VT	T	2.2KΩ	J	1/10W	R837	ERJ6GEYJ122VT	T	1.2KΩ	J	1/10W
R598	ERJ6GEYJ222VT	T	2.2KΩ	J	1/10W	R838	ERJ6GEYJ331VT	T	330 Ω	J	1/10W
R599	ERJ6GEYJ682VT	T	6.8KΩ	J	1/10W	R839	ERJ6GEYJ682VT	T	6.8KΩ	J	1/10W
R601	ERJ6ENF1553VT	T	165KΩ	F	1/10W	R840	ERDS2TJ212TT	C	2.2KΩ	J	1/4W
R602	ERJ6ENF1553VT	T	165KΩ	F	1/10W	R844	ERQ12AJR47HK	F	0.47 Ω	J	1/2W
R603	ERD25TJ100TT	C	10 Ω	J	1/4W	R850	ERDS2TJ473TT	C	47KΩ	J	1/4W
R604	ERDS1TJ272TT	C	2.7KΩ	J	1/2W	R851	ERG3SJW393E	M	39KΩ	J	3W
R605	ERJ6GEYJ1R0VT	T	1 Ω	J	1/10W	R852	ERD25TJ103TT	C	10KΩ	J	1/4W
R606	ERQ92TKF8252T	M	82.5KΩ	F	1/4W	R853	ERDS2TJ103TT	C	1KΩ	J	1/4W
R607	ERJ6GEYJ5R0VT	T	5.0Ω	J	1/10W	R860	ERDS1TJ473TT	C	47KΩ	J	1/2W
R610	ERQ92TKF8252T	M	82.5KΩ	F	1/4W	R861	ERX3FJX47R0E	M	4.7 Ω	J	3W
R701	ERDS2TJ563TT	C	56KΩ	J	1/4W	R862	ERDS1TJ563TT	C	56KΩ	J	1/2W
R702	ERJ6GEYJ154VT	T	150KΩ	J	1/10W	R863	ERQ12AJR47HK	F	0.47 Ω	J	1/2W
R703	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R864	ERQ12AJR47HK	F	0.47 Ω	J	1/2W
R704	ERJ6GEYJ683VT	T	68KΩ	J	1/10W	R865	ERQ12AJR47HK	F	0.47 Ω	J	1/2W
R707	ERJ6GEYJ104VT	T	100KΩ	J	1/10W	R866	ERQ12AJR47HK	F	0.47 Ω	J	1/2W
R708	ERDS2TJ104TT	C	100KΩ	J	1/4W	R867	ERX3FJX5R6E	M	5.6 Ω	J	3W
R709	ERJ6GEYJR00VT	T	0 Ω		10W	R868	ERX1SJW1R0E	M	1.0Ω	J	1W
R710	ERDS2TJ333TT	C	33KΩ	J	1/4W	R869	ERJ6GEYJ223VT	T	22KΩ	J	1/10W
R711	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R870	ERJ6GEYJ103VT	T	10KΩ	J	1/10W
R712	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R872	ERJ6GEYJ271VT	T	270 Ω	J	1/10W
R713	ERJ6GEYJ153VT	T	15KΩ	J	1/10W	R873	ERDS1TJ221TT	C	220 Ω	J	1/2W
R714	ERDS2TJ104TT	C	100KΩ	J	1/4W	R874	ERDS1TJ221TT	C	220 Ω	J	1/2W
R717	ERDS2TJ122TT	C	1.2KΩ	J	1/4W	R875	ERJ6GEYJ682VT	T	6.8KΩ	J	1/10W
R721	ERQ12AGK394D	S	390KΩ	K	1/2W	R876	ERDS2TJ103TT	C	1KΩ	J	1/4W
R802	TAP101ND18	F	18 Ω		1W	R877	ERDS2TJ563TT	C	56KΩ	J	1/4W
R803	ERTD6ZFL100F	THERMISTOR				R878	ERJ6GEYJ102VT	T	1KΩ	J	1/10W
R804	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W	R880	ERJ6GEYJ562VT	T	5.6KΩ	J	1/10W
R805	ERJ6GEYJ561VT	T	560 Ω	J	1/10W	R881	ERJ6GEYJ102VT	T	1KΩ	J	1/10W
R806	ERDS1TJ224TT	C	220KΩ	J	1/2W	R882	ERDS1TJ120TT	C	12 Ω	J	1/2W

REF. NO.	PART NO.	DESCRIPTION				REF. NO.	PART NO.	DESCRIPTION			
R863	ERDS2TJ104TT	C	100KΩ	J	1/4W	R953	ERDS2TJ223TT	C	22KΩ	J	1/4W
R864	ERJ6GEYJ102VT	T	1KΩ	J	1/10W	R954	ERJ6GEYJ223VT	T	22KΩ	J	1/10W
R865	ERX3FJXR56E	M	0.56Ω	J	3W	R955	ERJ6GEYJ223VT	T	22KΩ	J	1/10W
R866	ERDS1TJ332TT	C	3.3KΩ	J	1/2W	R956	ERDS2TJ331TT	C	330Ω	J	1/4W
R867	ERDS2TJ102TT	C	1KΩ	J	1/4W	R957	ERJ6GEYJ563VT	T	56KΩ	J	1/10W
R868	ERDS2TJ472TT	C	4.7KΩ	J	1/4W	R1000	ERDS2TJ103TT	C	1KΩ	J	1/4W
R869	ERDS2TJ392TT	C	3.9KΩ	J	1/4W	R1001	ERD25TKF75R0T	M	75Ω	F	1/4W
R890	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R1002	ERDS2TJ330TT	C	33Ω	J	1/4W
R892	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R1003	ERDS2TJ103TT	C	1KΩ	J	1/4W
R893	ERD25FVJ222C	C	2.2KΩ	J	1/4W	R1005	ERDS2TJ472TT	C	4.7KΩ	J	1/4W
R894	ERJ6GEYJ102VT	T	1KΩ	J	1/10W	R1009	ERDS2TKF2870T	M	287Ω	F	1/4W
R900	ERDS2TJ103TT	C	1KΩ	J	1/4W	R1011B	ERG5SJ182ST	M	1.8KΩ	J	5W
R901	ERDS2TJ152TT	C	1.5KΩ	J	1/4W	R1011A	ERG5SJ182ST	M	1.8KΩ	J	5W
R902	ERDS2TJ152TT	C	1.5KΩ	J	1/4W	R1012	ERDS1TJ472TT	C	4.7KΩ	J	1/2W
R903	ERJ6GEYJ152VT	T	1.5KΩ	J	1/10W	R1014B	ERG1SJW101E	M	100Ω	J	1W
R904	ERDS1VJ562TT	C	5.6KΩ	J	1/2W	R1014A	ERG1SJ101V	M	100Ω	J	1W
R905	ERDS2TJ562TT	C	5.6KΩ	J	1/4W	R1015	ERDS2TJ390TT	C	39Ω	J	1/4W
R906	ERDS2TJ562TT	C	5.6KΩ	J	1/4W	R1016	ERDS2TJ104TT	C	100KΩ	J	1/4W
R907	ERDS2TJ101TT	C	100Ω	J	1/4W	R1019	ERDS2TJ181TT	C	180Ω	J	1/4W
R908	ERJ6GEYJ102VT	T	1KΩ	J	1/10W	R1020	ERDS1TJ330TT	C	33Ω	J	1/2W
R909	ERDS2TJ102TT	C	1KΩ	J	1/4W	R1021	ERDS1TJ391TT	C	390Ω	J	1/2W
R910	ERDS2TJ102TT	C	1KΩ	J	1/4W	R1030B	ERG1SJW101E	M	100Ω	J	1W
R911	ERDS2TJ101TT	C	100Ω	J	1/4W	R1030A	ERG1SJ101V	M	100Ω	J	1W
R912	ERDS2TJ223TT	C	22KΩ	J	1/4W	R1100	ERD25TJ103TT	C	10KΩ	J	1/4W
R913	ERDS2TJ103TT	C	1KΩ	J	1/4W	R1101	ERD25TKF75R0T	M	75Ω	F	1/4W
R914	ERDS2TJ392TT	C	3.9KΩ	J	1/4W	R1102	ERDS2TJ330TT	C	33Ω	J	1/4W
R916	ERDS2TJ333TT	C	33KΩ	J	1/4W	R1103	ERDS2TJ103TT	C	1KΩ	J	1/4W
R920	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R1105	ERDS2TJ472TT	C	4.7KΩ	J	1/4W
R921	ERJ6GEYJ563VT	T	56KΩ	J	1/10W	R1109	ERDS2TKF2870T	M	287Ω	F	1/4W
R922	ERJ6GEYJ563VT	T	56KΩ	J	1/10W	R1111B	ERG5SJ182ST	M	1.8KΩ	J	5W
R923	ERJ6GEYJ563VT	T	56KΩ	J	1/10W	R1111A	ERG5SJ182ST	M	1.8KΩ	J	5W
R924	ERJ6GEYJ563VT	T	56KΩ	J	1/10W	R1112	ERDS1TJ472TT	C	4.7KΩ	J	1/2W
R925	ERJ6GEYJ223VT	T	22KΩ	J	1/10W	R1114A	ERG1SJW101E	M	100Ω	J	1W
R926	ERJ6GEYJ223VT	T	22KΩ	J	1/10W	R1114B	ERG1SJW101E	M	100Ω	J	1W
R927	ERJ6GEYJ223VT	T	22KΩ	J	1/10W	R1115	ERDS2TJ470TT	C	47Ω	J	1/4W
R928	ERJ6GEYJ223VT	T	22KΩ	J	1/10W	R1116	ERDS2TJ104TT	C	100KΩ	J	1/4W
R929	ERDS2TJ101TT	C	100Ω	J	1/4W	R1119	ERDS2TJ331TT	C	330Ω	J	1/4W
R930	ERJ6GEYJ101VT	T	100Ω	J	1/10W	R1120	ERDS1TJ330TT	C	33Ω	J	1/2W
R931	ERJ6GEYJ101VT	T	100Ω	J	1/10W	R1121	ERDS1TJ391TT	C	390Ω	J	1/2W
R932	ERDS2TJ331TT	C	330Ω	J	1/4W	R1130B	ERG1SJW101E	M	100Ω	J	1W
R933	ERDS2TJ331TT	C	330Ω	J	1/4W	R1130A	ERG1SJW101E	M	100Ω	J	1W
R934	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R1200	ERD25TJ103TT	C	10KΩ	J	1/4W
R935	ERDS2TJ102TT	C	1KΩ	J	1/4W	R1201	ERD25TKF75R0T	M	75Ω	F	1/4W
R936	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R1202	ERDS2TJ330TT	C	33Ω	J	1/4W
R937	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R1203	ERDS2TJ103TT	C	1KΩ	J	1/4W
R938	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W	R1205	ERDS2TJ472TT	C	4.7KΩ	J	1/4W
R940	ERDS2TJ101TT	C	100Ω	J	1/4W	R1209	ERDS2TKF2870T	M	287Ω	F	1/4W
R941	ERDS2TJ101TT	C	100Ω	J	1/4W	R1211B	ERG5SJ182ST	M	1.8KΩ	J	5W
R942	ERDS2TKF2553T	M	255KΩ	F	1/4W	R1211A	ERG5SJ182ST	M	1.8KΩ	J	5W
R943	ERDS2TKF1001T	M	1KΩ	F	1/4W	R1212	ERDS1TJ472TT	C	4.7KΩ	J	1/2W
R944	ERJ6ENF2553VT	T	255KΩ	F	1/10W	R1214A	ERG1SJW101E	M	100Ω	J	1W
R945	ERJ6ENF1001VT	T	1KΩ	F	1/10W	R1214B	ERG1SJ101V	M	100Ω	J	1W
R949	ERDS2TJ222TT	C	2.2KΩ	J	1/4W	R1215	ERDS2TJ470TT	C	47Ω	J	1/4W
R950	ERD25TJ104TT	C	100KΩ	J	1/4W	R1216	ERDS2TJ104TT	C	100KΩ	J	1/4W
R951	ERDS2TJ563TT	C	56KΩ	J	1/4W	R1219	ERDS2TJ221TT	C	220Ω	J	1/4W
R952	ERJ6GEYJ563VT	T	56KΩ	J	1/10W	R1220	ERDS1TJ330TT	C	33Ω	J	1/2W

REF. NO.	PART NO.	DESCRIPTION
R1221	ERDS1TJ391TT	C 390 Ω J 1/2W
R1232B	ERG1SJ101V	M 100 Ω J 1W
R1232A	ERG1SJW101E	M 100 Ω J 1W
R1301	ERDS2TJ822TT	C 8.2KΩ J 1/4W
R1302	ERDS2TJ472TT	C 4.7KΩ J 1/4W
R1303	ERDS2TJ330TT	C 33 Ω J 1/4W
R1304	ERDS1TJ681TT	C 680 Ω J 1/2W
R1307	ERDS2TJ102TT	C 1KΩ J 1/4W
R1308	ERDS2TJ102TT	C 1KΩ J 1/4W
R1309	ERDS2TJ102TT	C 1KΩ J 1/4W
R1310	ERDS2TJ102TT	C 1KΩ J 1/4W
R1311	ERDS2TJ102TT	C 1KΩ J 1/4W
R1312	ERDS2TJ103TT	C 1KΩ J 1/4W
R1313	ERDS2TJ332TT	C 3.3KΩ J 1/4W
R1314	ERDS2TKF9091T	M 9.09KΩ F 1/4W
R1315	ERDS2TJ222TT	C 2.2KΩ J 1/4W
R1316	ERDS2TJ474TT	C 470KΩ J 1/4W
R1317	ERDS2TJ102TT	C 1KΩ J 1/4W
R1318	ERDS2TJ151TT	C 150 Ω J 1/4W
R1319	ERDS1TJ273TT	C 27KΩ J 1/2W
R1320	ERDS2TJ152TT	C 1.5KΩ J 1/4W
R1321	ERDS2TJ822TT	C 8.2KΩ J 1/4W
R1323	ERDS2TJ100TT	C 10 Ω J 1/4W
R1324	ERDS2TJ181TT	C 180 Ω J 1/4W
R1326	ERDS2TJ473TT	C 47KΩ J 1/4W
R1327	ERDS2TJ473TT	C 47KΩ J 1/4W
R1328	ERDS2TJ221TT	C 220 Ω J 1/4W
R1329	ERDS1TJ101TT	C 100 Ω J 1/2W
R1330	ERDS1TJ560TT	C 56 Ω J 1/2W
R1331	ERDS1TJ101TT	C 100 Ω J 1/2W
R1332	ERDS1TJ100TT	C 10 Ω J 1/2W
R1334	ERD25TJ331TT	C 330 Ω J 1/4W
R1335	EXCELSR35T	001L
R1351	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R1352	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R1353	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R1354	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R1355	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R1356	ERJ6ENF5621VT	T 5.62KΩ F 1/10W
R1357	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R1358	ERJ6GEYJ683VT	T 68KΩ J 1/10W
R1359	ERDS2TJ153TT	C 15KΩ J 1/4W
R1360	ERJ6GEYJ392VT	T 3.9KΩ J 1/10W
R1361	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R1362	ERDS2TJ331TT	C 330 Ω J 1/4W
R1372	ERDS2TKF2102T	M 21KΩ F 1/4W
R1373	ERJ6ENF2702VT	T 27KΩ F 1/10W
R1374	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R1375	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R1376	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R1377	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R1378	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R1379	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R1501	ERDS2TJ471TT	C 470 Ω J 1/4W
R1503	ERDS2TJ331TT	C 330 Ω J 1/4W
R1504	ERDS2TJ473TT	C 47KΩ J 1/4W

REF. NO.	PART NO.	DESCRIPTION
R1505	ERDS2TJ331TT	C 330 Ω J 1/4W
R1506	ERDS2TJ103TT	C 1KΩ J 1/4W
R2301	ERDS2TJ102TT	C 1KΩ J 1/4W
R2302	ERDS2TJ102TT	C 1KΩ J 1/4W
R2303	ERDS1VJ2R2TT	C 2.2 Ω J 1/2W
R2304	ERDS1VJ2R2TT	C 2.2 Ω J 1/2W
R2305	ERDS2TJ471TT	C 470 Ω J 1/4W
R2306	ERDS2TJ471TT	C 470 Ω J 1/4W
R2307	ERDS2TJ471TT	C 470 Ω J 1/4W
R2308	ERDS2TJ471TT	C 470 Ω J 1/4W
R2309	ERX3FJX3R3E	M 3.3 Ω J 3W
R2310	ERX3FJX3R3E	M 3.3 Ω J 3W
R2401	ERDS2TJ103TT	C 1KΩ J 1/4W
R2402	ERDS2TJ683TT	C 68KΩ J 1/4W
R2403	ERDS2TJ103TT	C 1KΩ J 1/4W
R2404	ERDS2TJ683TT	C 68KΩ J 1/4W
R2405	ERDS2TKF4021T	M 4.02KΩ F 1/4W
R2406	ERDS2TKF3901T	M 3.9KΩ F 1/4W
R2407	ERDS2TKF4021T	M 4.02KΩ F 1/4W
R2408	ERDS2TKF1002T	M 10KΩ F 1/4W
R2409	ERDS2TJ102TT	C 1KΩ J 1/4W
R2410	ERDS2TJ102TT	C 1KΩ J 1/4W
R2411	ERDS2TKF6651T	M 6.65KΩ F 1/4W
R2412	ERDS2TKF2611T	M 2.61KΩ F 1/4W
R2413	ERDS2TJ102TT	C 1KΩ J 1/4W
R2414	ERG2SJW331E	M 330 Ω J 2W
R2415	ERDS2TJ622TT	C 6.2KΩ J 1/4W
R2416	ERDS2TJ222TT	C 2.2KΩ J 1/4W
R2417	ERDS2TJ562TT	C 5.6KΩ J 1/4W
R2418	ERDS2TJ682TT	C 6.8KΩ J 1/4W
R2420	ERX3FJX3R9E	M 3.9 Ω J 3W

SPARK GAPS

S1001	TAGDSP201MT	SPARK GAP
S1101	TAGDSP201MT	SPARK GAP
S1201	TAGDSP201MT	SPARK GAP
S1301	TAGDSP201MT	SPARK GAP
S1302	TAGDSP201MT	SPARK GAP
S1303	TGPS152GL	SPARK GAP

SWITCHS

△SW801	ESB91234A	AC SW
SW901	EVQPB005K	SWITCH
SW902	EVQPB005K	SWITCH
SW903	EVQPB005K	SWITCH
SW904	EVQPB005K	SWITCH
SW905	EVQPB005K	SWITCH
SW906	EVQPB005K	SWITCH
SW907	EVQPB005K	SWITCH

REF. NO.	PART NO.	DESCRIPTION
	TRANSFORMERS	
△T541	TLN4C65407D	SWITCHING DRIVE TRANS.
△T601	TLF4C64717M	FLYBACK TRANSFORMER
△T901	TLP65237R	SWITCHING TRANS.
△T981	TLP4C65127C	CHOKE COIL
	OTHERS	
CL1	TMM4C0083	LEAD CLAMPER
CL2	TMM16452	CLAMPER
△F801	XBA25T4.0AH	AC FUSE(T4AH/250V)
FG1	TJE4C0010	EARTH PLATE
FG2	TJE4C0010	EARTH PLATE
FG3	TJC65341	EARTH LOCK
FG4	TJC65341	EARTH LOCK
FG801	TJC65341	EARTH LOCK
FG802	TJC65341	EARTH LOCK
FG803	TJC65341	EARTH LOCK
FS801	TJC65502T	FUSE HOLDER
FS802	TJC65502T	FUSE HOLDER
J1	TXAJT1P1D1562	1P TERMINAL WIRE
JK1	TJS9A8440	JACK
JK2	TJS9A8440	JACK
JK3	TJS9A8760	JACK
JK4	TJS9A8760	PIN JACK
N1	TJS2541-07YN5	7P BASE
N2	TJS9A864A	15 PIN D-SUB BASE
N3	TJS876206	6P BASE
N4	TJS876303	3P BASE
N7	TJS876207	7P BASE
N8	TJS876204	4P BASE
N14	TJEP20G02M	CHIP 2P BASE
N15	TJEP20G03M	CHIP 3P BASE
N16	TJEP20G04M	CHIP 4P BASE
N101A	TXAJT12P1562	12P CONNECTOR
N101B	TJS876212	12P BASE
N102A	TXAJT11P1562	11P CONNECTOR
N102B	TJS876211	11P BASE
△N103	TJS4C6A50*	CRT SOCKET
N104	TEL302-9	TERMINAL (GT PIN)
N105-1	TEL302-9	TERMINAL (GT PIN)
N105-2	TEL302-9	TERMINAL (GT PIN)
N105-3	TEL302-9	TERMINAL (GT PIN)
N105-4	TEL302-9	TERMINAL (GT PIN)
N106	EMCS0451ML	4P BASE
N107	TJS876203	3P BASE
N108	TJS876206	6P BASE
N110-1	TEL302-9	TERMINAL (GT PIN)
N110-2	TEL302-9	TERMINAL (GT PIN)
△N601	TJT4C6601T	AC INLET(SS-120,10A)
N603-1	TEL302-9	TERMINAL (GT PIN)
N603-2	TEL302-9	TERMINAL (GT PIN)
N804	TXAJT07P152T	7P CONNECTOR
N9	TJS876202J	2P BASE
N900	TJS876203	3P BASE
△PC901	TLP721FD4GRH	PHOTO COUPLER P721F

REF. NO.	PART NO.	DESCRIPTION
TP1	TEL302-9	TERMINAL (GT PIN)
VR551	EVNDCAA03B53	VR. 5K Ω B
X901	HC49U805	8.0MHZ OSC
Z1061	TAX10125	LC FILTER
Z1151	TAX10125	LC FILTER
Z1251	TAX10125	LC FILTER
Z1351	TAXZJSR102T	LC FILTER
Z1352	TAXZJSR102T	LC FILTER
	TMK4C0039	MICA SHEET
	TMM5428-1	LEAD CLAMPER
	TUC4C0074-11	HEAT SINK
	TUC4C0100	HEAT SINK
	TUC4C0116-1	HEAT SINK
	TUC4C0117-1	HEAT SINK
	TUC4C0117-2	HEAT SINK
	TUC81534-7T	HEAT SINK
	TUC85829T	HEAT SINK
	TUC87574T	AC INLET METAL
	TUC87668T	HEAT SINK
	TUCC5012T	D-SUB CONN. SHIELD CASE
	TWS62D2009ELT	1P TERMINAL WIRE
	XTV3+10C	SCREW
	XWG3F10	WASHER
	XWGT40660	WASHER

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CONTENTS

SAFETY PRECAUTIONS

1. CAUTION

No modification of any circuit should be attempted. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and servicing guidelines.

2. SAFETY CHECK

Care should be taken while servicing this CRT display because of the high voltage used in the deflection circuits. These voltages are exposed in such area as the associated flyback and yoke circuits.

3. FIRE AND SHOCK HAZARD

3.1 Insert an isolation transformer between the CRT display and AC power line before servicing the chassis.

3.2 While servicing, specially in the high voltage circuit, pay attention to the original lead dress. If a short circuit is found, replace all parts which have overheated as a result of the short circuit.

3.3 All the protective devices must be reinstalled per the original design.

3.4 Servicing must be inspected for possible cold solder joints, frayed leads, damaged insulation, solder splashes or sharp solder points. Be certain to remove all foreign material.

4. LEAKAGE CURRENT COLD CHECK

4.1 Unplug the AC cord and connect a jumper between the two prongs on the plug.

4.2 Turn the CRT display power switch "on".

4.3 Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metallic part of the CRT display such as the metal frame, screwheads, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1Ω megohm minimum.

5. LEAKAGE CURRENT HOT CHECK

5.1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.

5.2 Connect a 1500 ohm, 10 watt resistor, paralled a 0.15 μF capacitor between each exposed metallic part and a good earth ground as shown in Fig 1.

5.3 Use an AC voltmeter with 1000 ohm/volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15 μF capacitor.

5.4 Move the resistor connection to each exposed metallic part and measure the voltage.

5.5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.

5.6 Voltage measured must not exceed 7.5 volt RMS. from any exposed metallic part to ground. A leakage current tester may be used in the above hot check, in which case any current measured must not exceed 5.0 milliamps. In the case of a measurement exceeding the 5.0 milliamp value, a fewer is required to eliminate the chance of a shock hazard.

Note:

High voltage is present when this CRT display is operating. Always discharge the anode of the picture tube to the display chassis to prevent shock hazard.

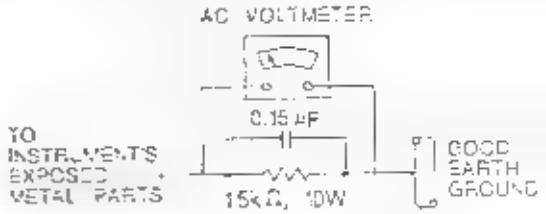


Figure. 1

6. IMPLOSION PROTECTION

All picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage and scratching during installation. Use only replacement picture tubes.

7. X-RADIATION

WARNING: The only potential source of X-Radiation is the picture tube. However, when the high voltage circuitry is operating properly there is no possibility of X-Radiation problem. To ensure that this is the case the high voltage must be tested and maintained at the following factory recommended levels.

Note: It is important to use an accurate, periodically calibrated, high voltage meter.

7-1 The procedure for adjusting the high voltage is shown on page 12.

7-2 If the high voltage cannot be adjusted to 25.0 KV, immediate service is required.

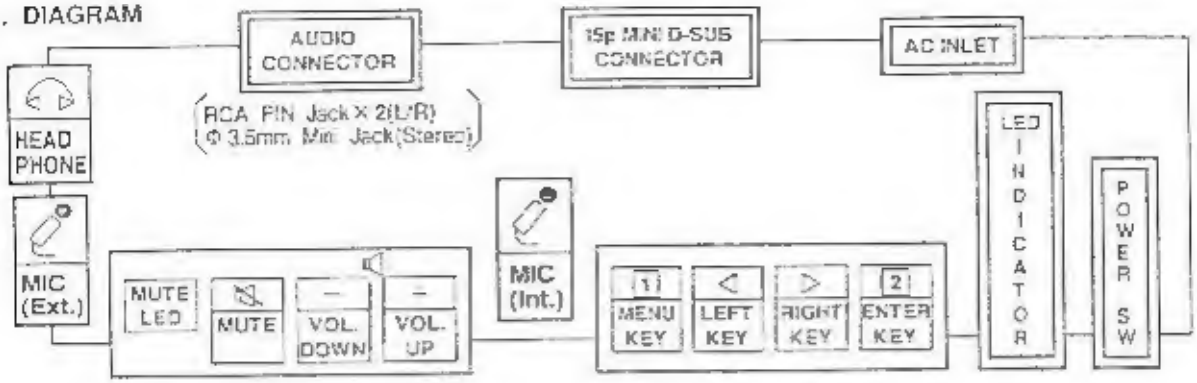
7-3 To prevent X-Radiation possibility it is essential to use the specified picture tube.

IMPORTANT SAFETY NOTICE

There are special components used in this CRT that are important for safety. These parts are identified by the international symbol ⚠ on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent X-RADIATION, shock, fire or other hazards. Do not modify the original design without written permission of the ViewSonic Corp. Company or this will void the original parts and labor guarantee.

SPECIFICATION

1. DIAGRAM



1.1 POWER SW., LED, [1]-key (MENU), ◁-key (LEFT), ▷-key (RIGHT), [2]-key, Audio Volume Up/Down key, Mute-key and Mute LED are located on the front panel.

1.2 Signal cable and AC inlet are located on the back side of the cabinet.

1.3 OSD menu includes the following function.
CONTRAST, BRIGHTNESS, H/V SIZE, H/V POSITION, V. PINCUSHION, TRAPEZOID, PARALLELOGRAM, COLOR SELECT, USER COLOR, VIDEO INPUT LEVEL, DISPLAY FREQUENCY, RECALL, AUDIO LEVEL, LANGUAGE.

※) CONTRAST can be directly controlled with ◁/▷-key.

※) With sync. signal, OSD menu appears by pushing [2]-key.
Without sync. signal, salf test menu appears by pushing [2]-key.

※) AUDIO LEVEL can be directly controlled with VOL UP/DOWN-key.

2. MECHANICAL SPECIFICATIONS

... refer to the attached drawing

2.1 Dimensions
Height: : 15.1 in. (385 mm)
Width: : 14.7 in (374 mm)
Depth: : 16.0 in (407 mm)

2.2 Net Weight: : 15.0 kg (33.0 lbs)

3. CONNECTORS

3.1 Signal connector

Video signal : 15pin Mini D-Sub
Line Input : RCA Type pin jack
Mic Output : Φ 3.5mm Stereo Mini jack *1
External Microphone : Φ 3.5mm Stereo Mini jack
Headphone : Φ 3.5mm Stereo Mini jack

*1 "To connect with sound Card. Please use stereo type cable. If you use monoral type cable, Mic doesn't work correctly."

3.2 AC inlet : CEE 22 typed connector

15P Mini D-Sub Pin assignment

1...RED	5...GROUND	11...GROUND
2...GREEN	7...GROUND	12...SDA
3...BLUE	8...GROUND	13...H.SYNC.
4...GROUND	9...— (OPNN)	14.V.SYNC(VCLK)
5...GROUND	10...GROUND	15...SCL

4. CRT SPECIFICATIONS

Part No.	M35KPC000X
Type	15", 90° 29 Φ , in-line gun
Dot Pitch	0.27 mm
Phosphor	R, G, B Short Persistence
Bulb	TINT
Face	New AGRAS Coating
Total Transmission	53.5%

5. ELECTRICAL SPECIFICATIONS

5.1 STANDARDS CONDITIONS...EXCEPT SPECIAL ITEMS

Display image	Green, full"H" characters with a border line. (7 × 9 dots) Video Signal: 100% duty
Video signal level	0.7 Vpp
Contrast, Brightness	Contrast: Max., Brightness: Center (50% point)
Ambient Temperature	20± 5°C (68± 9°F)
Input Voltage	AC 120 V, 60 Hz
Terrestrial magnetism	Vertical field: -M: 50 uT, -E: 40 uT A [illegible]: -45 uT Horizontal field: no field
Viewing direction	Parallel to the CRT axis
Measurements	After an initial warming up time of more than 30 minutes
Ambient light	200± 50 lux
Display mode	1024 × 768 75Hz

5.2 POWER SUPPLY...Commercial power source

Input voltage	AC 90 - 254 V
Power frequency	50/60 Hz ± 3 Hz
Input current	2.0 A (at AC 100V)
Inrush current (at 20°C)	40A0-p
Power consumption	120W (Typ.)

TIMING CHART

A	Period
B	Blanking
C	Sync Width
D	Back Porch
E	Active
F	Front Porch

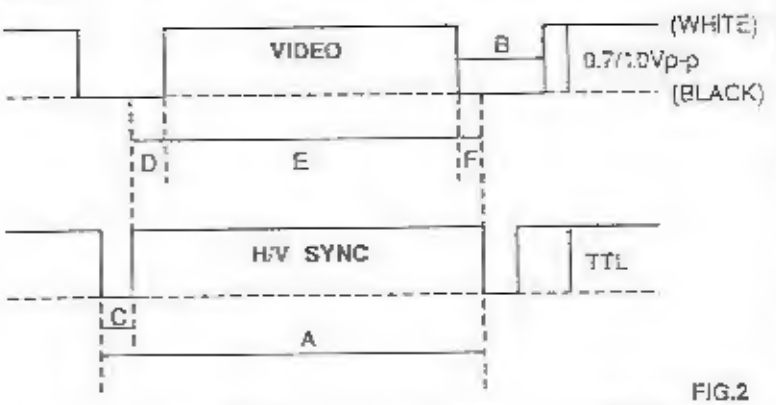


FIG.2

		PRESET			RESERVATION
		MODE-58	MODE-57	MODE-43	MODE-2
		640 X 480 at 75Hz	800 X 600 at 75Hz	1024 X 768 at 75Hz	VGA480 at 70Hz
DOT CLOCK		31.500 MHz	49.500 MHz	78.750 MHz	25.175 MHz
HORIZ	1H	37.50 KHz	46.88 KHz	60.02 KHz	31.47 KHz
	A-Period	25.667 us (640 dots)	21.333 us (1056 dots)	16.660 us (1312 dots)	31.778 us (800 dots)
	B-Blanking	6.349 us (200 dots)	5.172 us (256 dots)	3.657 us (288 dots)	6.356 us (160 dots)
	C-Sync width	2.032 us (64 dots)	1.616 us (80 dots)	1.219 us (96 dots)	3.813 us (96 dots)
	D-Back porch	3.810 us (120 dots)	3.232 us (160 dots)	2.235 us (176 dots)	1.907 us (48 dots)
	E-Active time	20.317 us (640 dots)	16.162 us (800 dots)	13.003 us (1024 dots)	25.423 us (640 dots)
	F-Front porch	0.508 us (16 dots)	0.323 us (16 dots)	0.203 us (16 dots)	0.635 us (16 dots)
VERT	fV	75.00 Hz	75.00 Hz	75.03 Hz	70.08 Hz
	A-Period	13.333 ms (500 lines)	13.333 ms (625 lines)	13.326 ms (800 lines)	14.269 ms (449 lines)
	B-Blanking	0.533 ms (20 lines)	0.533 ms (25 lines)	0.533 ms (32 lines)	1.557 ms (49 lines)
	C-Sync width	0.080 ms (3 lines)	0.064 ms (3 lines)	0.050 ms (3 lines)	0.064 ms (2 lines)
	D-Back porch	0.427 ms (16 lines)	0.448 ms (21 lines)	0.466 ms (28 lines)	1.112 ms (35 lines)
	E-Active time	12.800 ms (480 lines)	12.800 ms (600 lines)	12.795 ms (768 lines)	12.711 ms (400 lines)
	F-Front porch	0.027 ms (1 lines)	0.021 ms (1 lines)	0.017 ms (1 lines)	0.381 ms (12 lines)
Sync polarity (H/V)		Negative/Negative	Positive/Positive	Positive/Positive	Negative/Positive

		RESERVATION			
		MODE-3	MODE-9	MODE-12	MODE-15
		VGA480 at 60Hz	800 X 600 at 60Hz	1024 X 768 at 60Hz	1280 X 1024 at 60Hz
DOT CLOCK		25.175 MHz	40.000 MHz	65.000 MHz	109.497 MHz
HORIZ	1H	31.47 KHz	37.88 KHz	48.36 KHz	63.73 KHz
	A-Period	31.778 us (800 dots)	26.400 us (1056 dots)	20.677 us (1344 dots)	15.520 us (1716 dots)
	B-Blanking	6.356 us (160 dots)	6.400 us (256 dots)	4.923 us (320 dots)	4.200 us (438 dots)
	C-Sync width	3.813 us (96 dots)	3.200 us (128 dots)	2.092 us (136 dots)	1.420 us (156 dots)
	D-Back porch	1.907 us (48 dots)	2.200 us (88 dots)	2.462 us (160 dots)	2.174 us (238 dots)
	E-Active time	25.423 us (640 dots)	20.000 us (800 dots)	15.754 us (1024 dots)	11.690 us (1280 dots)
	F-Front porch	0.636 us (16 dots)	1.000 us (40 dots)	0.369 us (24 dots)	0.402 us (44 dots)
VERT	fV	59.94 Hz	60.32 Hz	60.004 Hz	60.00 Hz
	A-Period	16.684 ms (525 lines)	16.579 ms (628 lines)	16.666 ms (826 lines)	16.683 ms (1052 lines)
	B-Blanking	1.430 ms (45 lines)	0.739 ms (28 lines)	0.786 ms (38 lines)	0.586 ms (35 lines)
	C-Sync width	0.064 ms (2 lines)	0.106 ms (4 lines)	0.124 ms (6 lines)	0.047 ms (3 lines)
	D-Back porch	1.049 ms (33 lines)	0.607 ms (23 lines)	0.600 ms (29 lines)	0.502 ms (32 lines)
	E-Active time	15.254 ms (480 lines)	15.840 ms (600 lines)	15.880 ms (768 lines)	16.067 ms (1024 lines)
	F-Front porch	0.316 ms (10 lines)	0.026 ms (1 lines)	0.062 ms (3 lines)	0.047 ms (3 lines)
Sync polarity (H/V)		Negative/Negative	Positive/Positive	Negative/Negative	Negative/Negative

		RESERVATION			
		-1	-2	-3	-4
DOT CLOCK		29.600 MHz	40.250 MHz	64.940 MHz	89.430 MHz
HORIZ	1H	29.50 KHz	39.002KHz	53.997KHz	69.985KHz
	A-Period	33.894 us (768 dots)	25.640 us (1032 dots)	19.520 us (1186 dots)	14.298 us (1335 dots)
	B-Blanking	5.400 us (122 dots)	5.140 us (207 dots)	3.900 us (250 dots)	2.900 us (272 dots)
	C-Sync width	4.115 us (93 dots)	2.832 us (114 dots)	1.716 us (110 dots)	1.092 us (102 dots)
	D-Back porch	1.289 us (29 dots)	2.311 us (93 dots)	2.185 us (140 dots)	1.820 us (170 dots)
	E-Active time	27.878 us (630 dots)	19.901 us (804 dots)	14.007 us (897 dots)	10.960 us (1024 dots)
	F-Front porch	0.622 us (14 dots)	0.600 us (24 dots)	0.600 us (38 dots)	0.410 us (39 dots)
VERT	fV	46.05 Hz	77.079Hz	105.053 Hz	165.058 Hz
	A-Period	23.915 ms (514 lines)	12.974 ms (556 lines)	9.519 ms (514 lines)	6.056 ms (424 lines)
	B-Blanking	0.914 ms (24 lines)	0.615 ms (24 lines)	0.389 ms (21 lines)	0.386 ms (27 lines)
	C-Sync width	0.102 ms (3 lines)	0.103 ms (5 lines)	0.037 ms (2 lines)	0.043 ms (3 lines)
	D-Back porch	0.712 ms (21 lines)	0.513 ms (20 lines)	0.352 ms (19 lines)	0.343 ms (24 lines)
	E-Active time	19.899 ms (587 lines)	12.296 ms (477 lines)	4.860 ms (496 lines)	5.601 ms (392 lines)
	F-Front porch	0.102 ms (3 lines)	0.128 ms (5 lines)	0.093 ms (5 lines)	0.071 ms (5 lines)
Sync polarity (H/V)		Negative/Negative	Positive/Positive	Negative/Negative	Negative/Negative

5.4 Acceptable timing

- If your timing is within the following specification, this CRT display can automatically function with a certain size and position.

Horizontal: Sync frequency: 30.0 ~ 69.0 kHz
Blanking Time: ≧ 4.0 uS
Back Proch: ≧ 1.25 uS
Front Proch: ≦ Back Proch
Sync Width: ≧ 1.2 uS

Vertical: Sync frequency: 50.0 ~ 160.0 Hz
Blanking Time: ≧ 0.5 mS
Back Proch: ≧ 0.4 mS
Sync Width: ≧ 0.045 mS

- In case of size and/or position is not appropriate, please adjust it as you like through OSD menu, and if you want to keep it (size and position), please push the key for memory.
  Please notice, however, that there is the case you can not get the size and/or position you want. (for example Display Time is too short like MAC-II (640 × 824) timing, then you can't get bigger size of the image.)
- The CRT adopted in this CRT display is designed to minimize the moire phenomenon at suitable size for typical display modes. However, there might be a display format among many formats, in which the moire phenomenon appears on this display. In such case, please adjust the height and/or width until the moire disappears.

5.5 Signal level and input impedance

5.5.1 Video signal level

This CRT display is adjusted at the factory using 0.7 Vp-p Video Signal, Black level is 0V.

5.5.2 Sync Signal level

- H/V Separate, H/V Mixed: TTL level
- Sync on Green: 0.286 Vpp

5.5.3 Audio Signal level

- Maximum audio input level is 2.0Vrms
  (1.1kHz, square wave) to prevent signal saturation at preamplifier stage.)
  Note: This CRT display is designed that the Sound microphony on image is not visible less than 0.5Vrms audio input level. If the sound microphony appears, please reduce audio output level by Audio Volume Key.

5.5.4 Input impedance

- Video input: 75Ω
- Sync input: ≧ 1kΩ

5.6 Display performance (for preset timing)

5.6.1 Display area

a) 9 Preset mode

640×480, 832×624, 1024×768: WIDTH: 260 mm ± 5 mm, HEIGHT: 195 mm ± 5 mm

b) 5 Reservation mode

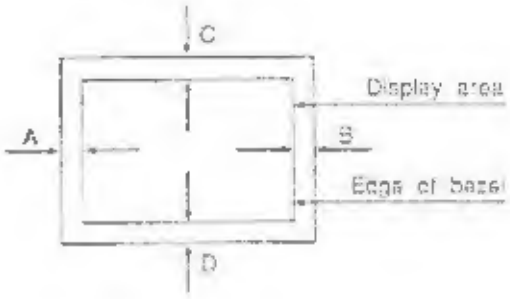
640×480, 640×480, 800×600, 1024×768: WIDTH: 260 mm ± 7 mm, HEIGHT: 195 mm ± 7 mm

1024×1280: WIDTH: 244 mm ± 5 mm, HEIGHT: 195 mm ± 5 mm

5.6.2 Centering

9 Preset mode

| A-B | ≦ 5 mm
| C-D | ≦ 5 mm



5.6.3 Distortion

a) Trapezoid, Parallelogram & Rotation

| a | , | b | ≦ 2.5 mm (factory preset)
| a | , | b | ≦ 1.5 mm (user adjustable)

| c | ≦ 1.5 mm (factory preset)
| d | ≦ 1.5 mm (factory preset)

b) Pincushion and Barrel

| c1 | , | c2 | ≦ 2.0 mm
| d1 | , | d2 | ≦ 2.0 mm (factory preset)
1.5 mm (user adjustable)